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PUBLIC DOCUMENTS

OF

MASSACHUSETTS:

BEING THE

ANNUAL REPORTS

OF VARIOUS

Public Officers and Institutions,

FOR THE YEAR

1871.

PUBLISHED BY THE SECRETARY OF THE COMMONWEALTH,
Under authority of Chapter 4 of the General Statutes.

VOL. I.

Nos. 1 to 4.

BOSTON:

WRIGHT & POTTER, STATE PRINTERS,

79 MILK STREET (CORNER OF FEDERAL).

1872.



14

PUBLIC DOCUMENTS

FOR THE YEAR

1 8 7 1 .

Vol. I.

- No. 1. Registration Report.
2. Report of Secretary of the Board of Education.
3. Report of State Librarian.
4. Report of Secretary of the Board of Agriculture.

Vol. II.

- No. 5. Report of Treasurer of the Commonwealth.
6. Report of Auditor of the Commonwealth.
7. Report of Adjutant-General of the Commonwealth.
8. Report of Commissioner of Savings Banks.
9. Insurance Commissioner's Report. (Part 1, *Fire and Marine.*)

Vol. III.

- No. 9. Insurance Commissioner's Report. (Part 2, *Life Insurance.*)
10. Abstract of Returns of Corporations organized under the General Statutes.
11. Report of Commissioners on Public Lands.
12. Attorney-General's Report.
13. Report of Inspectors and Officers of the State Prison.
14. Report of Agent for Discharged Convicts.
15. Returns of Sheriffs, concerning Moneys, &c.
16. Returns of Registers of Deeds.
17. Report of Board of State Charities.

- No. 18. Report of State Reform School.
19. Report of Massachusetts Nautical School.
20. Report of State Industrial School for Girls.
21. Report of State Lunatic Hospital at Northampton.
22. Report of State Lunatic Hospital at Taunton.
23. Report of State Lunatic Hospital at Worcester.

Vol. IV.

- No 24. Report of State Almshouse at Bridgewater.
25. Report of State Almshouse at Monson.
26. Report of State Almshouse at Tewksbury.
27. Report of Perkins Institution, &c., for the Blind.
28. Report of School for Idiotic and Feeble-Minded Youth.
29. Reports of Railroad Corporations and Railroad Commissioners.
30. Aggregates of Polls, Property and Taxes.
31. Report of State Board of Health.

INDEX TO PUBLIC DOCUMENTS.
Vol. I.

Documents numbered 1 to 4, inclusive.

A.

Agriculture, Report of Secretary of Board of, No. 4

B.

**Births, Marriages and Deaths, Report relating to Registry and
Returns of, 1**

E.

Education, Report of Secretary of Board of, 2

L.

Library, State, Report of Librarian of, 3

R.

Registration Report of Births, Marriages and Deaths, 1

TWENTY-NINTH
REGISTRATION REPORT.
1870.

TWENTY-NINTH REPORT

TO THE

LEGISLATURE OF MASSACHUSETTS

RELATING TO THE

Registry and Return

OF

BIRTHS, MARRIAGES AND DEATHS,

IN THE

COMMONWEALTH,

For the Year ending December 31, 1870.

PREPARED UNDER DIRECTION OF THE
SECRETARY OF THE COMMONWEALTH.

WITH EDITORIAL REMARKS
BY GEORGE DERBY, M. D.,
Professor of Hygiene in Harvard University, and Secretary of State Board of Health.

B O S T O N :

WRIGHT & POTTER, STATE PRINTERS,
79 MILK STREET (CORNER OF FEDERAL).

1872.

Commonwealth of Massachusetts,

SECRETARY'S DEPARTMENT, BOSTON, March 12, 1872.

To the Honorable Senate and House of Representatives.

In conformity with the General Statutes, I have the honor to submit herewith the Twenty-Ninth Annual Report relating to the BIRTHS, MARRIAGES, AND DEATHS occurring in Massachusetts during the year 1870, and returned from the several cities and towns according to law.

In addition to the usual tables the present document presents features of special interest in the tables of the United States Census of 1870, several of which appear in these pages, and some of them printed for the first time from the manuscript copy forwarded from Washington through the courtesy of Gen. Francis A. Walker, Supt. U. S. Census.

The editorial comments and observations constituting the introductory portion of the present Registration Report have been furnished by Dr. GEORGE DERBY,

Secretary of the State Board of Health, and Professor of Hygiene in Harvard University, and will be found both interesting and instructive, particularly in relation to matters connected with the recent United States Census.

Respectfully submitted.

OLIVER WARNER,

Secretary of the Commonwealth.

CONTENTS.

SUMMARY OBSERVATIONS.

	Page
Table of Births, Deaths and Marriages, 1870,	1
Comparison with 1869,	1
Birth, Marriage and Death-rates, 1870,	2
Births, Marriages and Deaths for fourteen years— <i>Table</i> ,	2
 POPULATION,	 3
Population by Counties, showing changes in the past ten years— <i>Table</i> ,	3
Gains and losses in the Counties and Towns,	4
Age and Sex of the Population, 1870— <i>Table</i> ,	5
Ages of the Population in the past forty years— <i>Table</i> ,	6
Persons over 80 years of age— <i>Table</i> ,	7
Aged persons in the several Counties— <i>Table</i> ,	8
Comments on the preceding tables,	8
Rate of increase of Population,	8
Changes now taking place,	9
Indisposition to labor with the hands,	9
Demand for unskilled labor,	9
Influence of the war on the birth of children,	10
New towns, changes of names, &c.,	10
 BIRTHS,	 11
Number in the past nineteen years— <i>Table</i> ,	11
Comments on this birth-table,	11
Births in the several Counties— <i>Table</i> ,	12
Births—Quarterly rates, 1870— <i>Table</i> ,	13
Births in six-months periods, ten years— <i>Table</i> ,	13
Comments on the above table,	13
Proportion of the sexes, nineteen years— <i>Table</i> ,	14
Comments on the proportions of the sexes,	14
Proportions of the sexes in the several Counties, 1870— <i>Table</i> ,	15
Parentage of children born in 1870— <i>Table</i> ,	16
Percentage of American and foreign births, seven years— <i>Table</i> ,	19
The same for twenty-two years— <i>Table</i> ,	19
Comments on the preceding tables,	20
Plural births,	20
Illegitimates,	20
Stillborn,	20

	Page
MARRIAGES,	21
Marriages during seven years— <i>Table</i> ,	21
Marriages—Quarterly aggregates and percentages, five years— <i>Table</i> ,	21
Rates by Counties— <i>Table</i> ,	22
Ages at Marriage— <i>Table</i> ,	23
Social or conjugal condition— <i>Table</i> ,	24
Certain marriages— <i>Table</i> ,	25
Some other marriages— <i>Table</i> ,	26
Comments on the preceding tables,	27
Nativity of persons married, 1870— <i>Table</i> ,	28
Percentages of marriages according to nativity, nine years— <i>Table</i> ,	29
Nativity of persons married during ten years, numbers and percentages— <i>Table</i> ,	29
 DEATHS,	 31
Comparison with previous years,	31
Death-rate for six years— <i>Table</i> ,	31
Deaths in geographical divisions of the State— <i>Table</i> ,	31
Death-rate in the Counties, 1870— <i>Table</i> ,	32
Comments on the preceding table,	33
Death-rate in largest cities and towns,	33
Deaths by quarters of the year— <i>Table</i> ,	34
Sex,	34
Proportions of the sexes, 19 years— <i>Table</i> ,	34
Ages, sex and rates, 1870— <i>Table</i> ,	35
Average age at death,	35
Deaths of persons aged 100 years— <i>Table</i> ,	36
Nativity of decedents in 1870— <i>Table</i> ,	37
Nativity of decedents, seventeen years— <i>Table</i> ,	38
Parent-nativity— <i>Table</i> ,	39
Deaths of Americans and foreigners at certain ages— <i>Table</i> ,	49
Comments on table,	50
 CAUSES OF DEATH,	 51
The weather in 1870,	51
Deaths from certain zymotic diseases— <i>Table</i> ,	52
Order of succession of ten principal diseases, eight years— <i>Table</i> ,	15
Deaths from certain specified causes in 1870— <i>Table</i> ,	54
Percentages of the same— <i>Table</i> ,	56
Deaths from certain specified causes, eight years— <i>Table</i> ,	58
Percentages of the same,	60
Diphtheria,	62
Dysentery,	62
Typhus,	62
Measles,	62
Scarlatina,	63
Cholera Infantum,	63
Consumption,	63
Deaths at certain seasons,	64
Deaths at certain ages, three years— <i>Table</i> ,	64
Deaths in the Counties, 1870— <i>Table</i> ,	64
Order of mortality by Counties— <i>Table</i> ,	65
Mortality during eighteen years— <i>Table</i> ,	66
Pneumonia,	66
Deaths in the Counties, 1870— <i>Table</i> ,	67

CONTENTS.

ix

Page

ABSTRACTS—1870.

I.—GENERAL ABSTRACT—Population of 1870—Births, Marriages, and Deaths, registered in each county and town in 1870, distinguishing sex and parentage of Births, nativity of Marriages, and sex and average Age of Deaths,	ii
II.—BIRTHS—registered in 1870, by counties, by months, and by sex, . . .	xx
A.— <i>Supplement</i> —Plurality Births registered in 1870, by counties, by months, and by sex,	xxii
B.— <i>Supplement</i> —Illegitimate Births registered in 1870, by counties, by months, and by sex,	xxiv
III.—STILLBORN, registered in 1870, by counties, by months, and by sex, . .	xxvi
IV.—MARRIAGES, registered in 1870, by counties and by months,	xxviii
V.—MARRIAGES—as registered in 1870, by Ages and conjugal conditions, . .	xxix
VI.—DEATHS, registered in 1870, by counties, by months, and by sex, . . .	xxxii
VII.—DEATHS, exhibiting the Age and sex of Deaths registered in each county and town in 1870—also Population of 1870, and Ratio of Deaths to Population,	xxxiv
VIII.—CAUSES OF DEATH,—1870— <i>alphabetically</i> arranged, by months, ages, and sex,	lxxii
IX.—CAUSES OF DEATH,—1870— <i>nosologically</i> classified, by counties, . . .	lxxxviii
<i>Note</i> to preceding,	xcv
X.—COMPARATIVE MORTALITY.—Causes of Death for <i>twenty-nine</i> years—also for the last <i>six</i> years— <i>nosologically</i> classified—with ratios and percentages,	xcvii
<i>Note</i> on classification of Infantile diseases,	cv
XI.—OCCUPATIONS—1870 and 1843-70,—numbers, with their aggregate and average ages, registered as having died after pursuing various specified occupations,	cvi

SIX YEARS' ABSTRACTS—1865-70.

XII.—GENERAL ABSTRACT—Population in 1870—Births, Marriages, and Deaths, registered in each City and Town during <i>six years</i> —1865-6-7-8-9-70, stating sex, and the ratio of Births, Marriages, and Deaths, to Population,	cxiv
XIII.—BIRTHS registered in 1865-70, by counties, by months, and by sex, . .	cxxxiv
<i>Supplement</i> —Plurality Births registered in 1865-70, by counties, by months, and by sex,	cxxxvi
XIV.—STILLBORN—registered in 1865-70, by counties, by months, and by sex, .	cxxxviii
XV.—MARRIAGES registered in 1865-70, by counties and by <i>months</i> ,	cxl
XVI.—MARRIAGES registered in 1865-70, by <i>ages</i> , and by social or conjugal conditions,	cxli
XVII.—DEATHS registered in 1865-70, by counties, by <i>months</i> , and by sex, . .	cxliv
XVIII.—DEATHS registered in 1865-70, by counties, by <i>age</i> , and by sex, . . .	cxlvi

APPENDIX.

Laws relating to Registry and Return of Births, Marriages, and Deaths, in Massachusetts,	cl
Laws relating to Marriage in Massachusetts,	clii
CLASSIFICATION OF DISEASES, as adopted in the Registration of Massachusetts, .	clvi

TWENTY-NINTH REGISTRATION REPORT.

(1870.)

The accompanying tables exhibit the results of registration in Massachusetts for the year 1870, and represent the records of births, marriages and deaths in all the cities and towns of the State. An examination of their details and a comparison with the results reported in previous years cannot fail to suggest deductions of interest, not only to the statesman and the statistician, but to all who are in any way connected with matters pertaining to State hygiene.

By the first table, which gives a summary statement, it appears that there have been recorded 38,259 births, 14,721 marriages and 27,329 deaths, an aggregate of 80,309, or 3,288 more than during the year 1869.

If a comparison be made in each of these divisions of births, marriages and deaths, with the record of the previous year, it will be seen that

The births have increased by	2,118
The marriages have diminished by	105
The deaths have increased by	1,275

The number of births is greater than has ever before been reported. The deaths are more numerous than in any previous year, except 1863 and 1864. The marriages, although less in number than those reported the year previous (where the number was considerably in excess of former years), are somewhat more than the average number for the past fourteen years.

The natural increase of population, or excess of births over deaths, is 10,930, or 843 more than in 1869.

The daily natural increase is an average of 29.9.

One living child was born to every 38.09 persons; one person in every 49.49 was married, and one person in every 53.33 died.

The daily average of living births was . . . 104.82

The daily average number of marriages was . . . 40.33

The daily average number of deaths was . . . 74.87

The rates of births, marriages and deaths are as follows:—

Births, 26.25 to 1,000 of population.

Marriages, 20.20 “ “

Deaths, 18.07 “ “

Excess of Birth-rate over Death-rate, 8.18 in a thousand, or .818 of one per cent.

This general result must be regarded as satisfactory. It will be seen by the next table that the excess of births over deaths, which was reduced during the war to less than 2,000 (in 1864), has now reached nearly 11,000.

TABLE showing the number of BIRTHS, MARRIAGES and DEATHS Registered in Massachusetts during the past fourteen years.

YEARS.	Births.	Marriages.	Deaths.	Excess of Births over Deaths.	Births to 100 persons.	Deaths to 100 persons.	Excess of Births in 100 persons.
1857, .	35,320	11,739	21,280	14,040	3.01	1.82	1.19
1858, .	34,491	10,527	20,776	13,715	2.89	1.74	1.15
1859, .	35,422	11,475	20,976	14,446	2.92	1.73	1.19
1860, .	36,051	12,404	23,068	13,983	2.93	1.87	1.06
1861, .	35,445	10,972	24,085	11,360	2.86	1.96	.90
1862, .	32,275	11,014	22,974	9,301	2.62	1.86	.76
1863, .	30,314	10,873	27,751	2,563	2.42	2.22	.20
1864, .	30,449	12,513	28,723	1,726	2.42	2.28	.14
1865, .	30,249	13,051	26,152	4,097	2.38	2.06	.32
1866, .	34,085	14,428	23,637	10,448	2.61	1.81	.80
1867, .	35,062	14,451	22,772	12,290	2.61	1.69	.92
1868, .	36,193	13,856	25,603	10,590	2.62	1.85	.77
1869, .	33,141	14,826	26,054	18,087	2.54	1.83	.71
1870, .	38,259	14,721	27,329	10,930	2.62	1.81	.81

POPULATION.

Since the publication of the Registration Report for 1869, the official census of the State by the United States government has been completed, and although not published in full is available for the purposes of the present work. It is, of course, obvious that these figures will enable us to arrive at conclusions which are more positive and reliable than those of the reports of some previous years which were necessarily founded on the State Census of 1865.

The total population of the State is 1,457,351. The gain or loss in population in five years, and in ten years in the several counties is shown in the following table:—

POPULATION by Counties.

COUNTIES.	1860.	1865.	1870.	IN FIVE YEARS, 1865-70.		IN TEN YEARS, 1860-70.	
				Increase.	Dec'se.	Increase.	Dec'se.
Barnstable, . . .	35,990	34,610	32,744	—	1,866	—	8,246
Berkshire, . . .	55,120	56,944	64,827	7,883	—	9,707	—
Bristol, . . .	93,794	89,395	102,886	13,491	—	9,092	—
Dukes, . . .	4,403	4,200	3,787	—	413	—	616
Essex, . . .	165,611	171,034	200,843	29,809	—	35,232	—
Franklin, . . .	31,434	31,340	32,635	1,295	—	1,201	—
Hampden, . . .	57,366	64,570	78,409	13,839	—	21,043	—
Hampshire, . . .	37,823	39,269	44,388	5,119	—	6,565	—
Middlesex, . . .	216,354	220,384	274,353	53,969	—	57,999	—
Nantucket, . . .	6,094	4,748	4,123	—	625	—	1,971
Norfolk, . . .	109,950	116,306	89,443	—	26,863*	—	20,507*
Plymouth, . . .	64,768	63,107	65,365	2,258	—	597	—
Suffolk, . . .	192,700	208,212	270,802	62,590*	—	78,102*	—
Worcester, . . .	159,659	162,912	192,716	29,804	—	33,057	—
Totals, . . .	1,231,066	1,267,081	1,457,351	190,320	—	226,285	—

* Roxbury and Dorchester annexed to Boston.

It will be seen that the large increase of population has taken place in the counties previously populous—in the centres of manufacturing industry, and of commerce. Barnstable, and Dukes and Nantucket have declined in a marked degree; the agricultural county of Franklin but little more than holds its own, and Hamp-

shire shows but a moderate gain. Both Plymouth and Franklin lost population during the five years of war, but are now recovering. On the other hand, Suffolk, Worcester, Middlesex, Hampden and Essex have greatly prospered, and Berkshire, an agricultural county with a good many factories, has also made a marked advance.

Looking at the population of the *towns* it appears that every town in Barnstable, Dukes and Nantucket Counties, except Provincetown, has lost population, and many of them very largely.

In Berkshire the principal gains have been in Adams, Pittsfield, West Stockbridge, Williamstown and Lenox.

In Bristol County the gain has been almost entirely in Fall River and Taunton, the former city having increased from 17,481 in 1865 to 26,766 in 1870.

In Essex County the most marked increase may be found in Lawrence, Lynn, Gloucester, Haverhill, Salem and Amesbury. Many towns in this county are nearly stationary, and a few have slightly declined.

In Hampden County the purely agricultural towns, like those of Franklin and Hampshire Counties, show a small but pretty steady decline, while the factory towns of Chicopee and Holyoke have increased greatly. Holyoke has nearly doubled its population in the past five years.

In Hampshire the towns of Northampton, Ware, Easthampton and Amherst have notably increased.

In Middlesex County the greatest gains have been in Cambridge, Lowell, Newton, Somerville and Waltham, but many smaller manufacturing towns have prospered, and only eight small farming towns have failed to hold their own.

Norfolk County has gained in the towns occupied largely by persons engaged in business in Boston.

In Plymouth County North Bridgewater is the only town which shows a marked increase.

Suffolk County has absorbed Roxbury and Dorchester, but has also gained in Boston proper, and in Chelsea.

Worcester County shows a small but pretty uniform decline in the population of its farming towns, but an equally steady and frequently large gain in its smaller factory towns, and a large gain in Worcester and Fitchburg.

Age and Sex of the Population of Massachusetts.—The information concerning these two interesting points is taken from manuscript reports received from the Census Bureau at Washington to which have been added such portions of the census of the State during the past forty years as would make the whole subject more intelligible.

POPULATION of Massachusetts arranged by Age and Sex.—U. S. Census, 1870.

AGES,	Total of all Ages.	ONE YEAR.				
		Under 1	1 to 2	2 to 3	3 to 4	4 to 5
Sex, { M., F.,	703,779	16,566	15,138	16,370	15,984	14,981
	758,572	16,421	14,888	15,963	16,053	14,525

AGES,	FIVE YEARS.		THREE YRS.	TWO YRS.	ONE YEAR.	FOUR YRS.	FIVE YRS.
	5 to 10	10 to 15	15 to 19	19 to 20	20 to 21	21 to 25	25 to 30
Sex, { M., F.,	69,854	74,270	40,516	27,849	14,078	52,203	60,784
	69,942	74,101	43,137	30,682	18,098	60,195	69,501

AGES,	FIVE YEARS.						
	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65
Sex, { M., F.,	52,667	48,497	42,689	37,417	32,131	21,833	19,667
	59,175	53,812	46,164	36,419	31,861	22,523	21,274

AGES.	FIVE YEARS.			TEN YEARS.		100 and over.	Unknown.
	65 to 70	70 to 75	75 to 80	80 to 90	90 to 100		
Sex, { M., F.,	12,760	9,024	4,821	3,410	234	20	16
	14,700	11,360	6,690	5,481	556	26	25

AGED PERSONS living in Massachusetts in 1870.

Showing the number who have reached or passed the age of eighty in each county, distinguished as of American or Foreign birth, and the percentage of such persons to the whole number of persons in each county. .

COUNTIES.	Population.	American.	Foreign.	Total.	Percentage.
Barnstable, . . .	82,774	848	8	851	1-07
Berkshire, . . .	64,827	406	54	460	0-71
Bristol, . . .	102,886	787	92	829	0-80
Dukes, . . .	8,787	56	1	57	1-50
Essex, . . .	200,843	1,183	183	1,366	0-68
Franklin, . . .	32,635	384	3	387	1-19
Hampden, . . .	78,409	400	76	476	0-61
Hampshire, . . .	44,388	852	32	884	0-86
Middlesex, . . .	274,358	1,299	284	1,583	0-58
Nantucket, . . .	4,123	90	6	96	2-33
Norfolk, . . .	89,443	578	85	663	0-74
Plymouth, . . .	65,365	660	46	706	1-08
Suffolk, . . .	270,802	583	374	957	0-35
Worcester, . . .	192,716	1,210	203	1,413	0-73
Totals, . . .	1,457,351	8,281	1,447	9,728	0-67

In looking at the preceding tables it is plainly seen that Massachusetts is prospering. We have gained more than 15 per cent. in five years. If this rate of growth is continued we shall have, before the year 1900, more than three millions of people in our territory, and Massachusetts will then be a more densely populated country than England now is. Evidently this is far beyond the natural increase of any settled community, and is due to the excess of immigration over emigration, fostered by our manufactures all over the State, and by the commercial activity of the city of Bos-

ton. Our farming towns are stationary. They have hardly more inhabitants than fifty years ago, and, of those who remain, the proportion of persons past middle life is probably now much greater than then. The young of both sexes crowd into the busy towns to seek their fortune, or go to more distant fields of labor, where their intelligence and skill may find a better harvest than among the cornfields of the old homestead.

While the farms are thus losing the young people, who go in all directions in and out of the State, there is a steady influx of foreigners to work in our mills and shoe-shops, and indeed, to perform a very great part of the manual labor in every department, not only of manufacturing industry, but of commerce and of agriculture.

Each generation seems to find this tendency of our people more marked. The American, born of Massachusetts stock, and educated in our common schools, if he does not despise the labor of the hands, at any rate finds the use of his mental faculties more profitable. He is unwilling to work on the farm, he is disinclined to the mechanical trades, and he seeks employment (like the Jews, all over the world) in some department of trade, or else in directing the labor of others. The hard work of the hands is chiefly done by strangers: by Irish and Germans and people from the English provinces, brought up under different influences. It is no part of our duty to speculate or moralize about this state of things, but it is important that the fact should be recognized in the interpretation of these tables.

Labor is in demand. Unskilled labor is relatively highly paid, and it attracts to our busy manufacturing towns and villages, and to the domestic service of our families, a host of laborers from other countries.

There are thus two active streams of movement among the people, the one leading from our rural townships to every field of commerce and industry in this and other States where money can be made by superior intelligence; the other, a still stronger current, bringing from foreign parts the busy hands which make our State a hive of industry.

Both are made up of the productive classes, and both leave a large proportion of the unproductive classes behind them. We may thus see a reason for the changes which have taken place in the distribution of ages among the people during the past forty

years. We were a comparatively stationary population in 1830. We are now migratory, but the influx far exceeds the efflux, and is working great changes in the character of our people.

We would call attention in the forty years' table above referred to, to the evidence which it affords of the influence of the civil war upon the birth of children. In the column representing the ages 5 to 10 in the years 1865 and 1870, the proportion suddenly drops from 11.32 to 9.60. While from 10 to 15 it remains about the same. The smaller proportion of children under 5 in both these years is probably also due to the loss of so many adult men between 1861 and 1865.

NEW TOWNS, CHANGES OF NAMES, &c.

The last notice in these reports of the incorporation or change of names of cities or towns in the Commonwealth, was in the report of 1867. The following additional changes have since occurred:—

1867. Roxbury was annexed to Boston in 1867.

1868. The town of HYDE PARK was incorporated April 22, 1868, from portions of Dorchester, Milton and Dedham. In the same year the name of South Danvers was by legislative enactment changed to Peabody, and that of South Reading to Wakefield.

1869. Dorchester was annexed to Boston in 1869.

1870. The town of NORFOLK was incorporated February 23, 1870, from portions of Wrentham, Franklin, Medway and Walpole. The town of EVERETT was incorporated March 9, 1870, from Malden. The town of GAY HEAD was incorporated April 30, 1870, embracing the former district of Gay Head. The town of MASHPEE was incorporated, May 18, 1870, embracing the former district of Marshpee.

1871. The town of AYER was incorporated February 14, 1871, from portions of Groton and Shirley. The town of MAYNARD was incorporated April 19, 1871, embracing portions of Stow and Sudbury. The name of North Chelsea was changed to Revere, March 24, 1871.

B I R T H S .

The following table shows the number of births registered in the State during the past nineteen years:—

Y E A R .	Born alive.	Stillborn.	Y E A R .	Born alive.	Stillborn.
1852, . . .	29,802	598	1862, . . .	32,275	907
1853, . . .	30,920	568	1863, . . .	30,314	903
1854, . . .	31,997	558	1864, . . .	30,449	856
1855, . . .	32,845	725	1865, . . .	30,249	859
1856, . . .	34,445	695	1866, . . .	34,085	1,046
1857, . . .	35,320	739	1867, . . .	35,062	1,007
1858, . . .	34,491	747	1868, . . .	36,193	1,050
1859, . . .	35,422	733	1869, . . .	36,141	1,094
1860, . . .	36,051	1,062	1870, . . .	38,259	1,019
1861, . . .	35,445	1,017			

The *Birth-rate* for 1870 is 2·62 for every one hundred persons, or 26 2 for every one thousand. Including the stillborn, a child was born to every 37 persons.

The whole number of births (stillborn included), is 39,278, or 2,043 more than in 1869. It is probable that this number is considerably less than the actual number of births in the State, the registration of births according to the existing regulations being exposed to obvious deficiencies.

The very marked diminution in the Birth-rate which occurred in 1862, and which, in consequence of the absence of male adults in the national service and the death of great numbers, continued during the four years of war (1862–5) has not yet been recovered

from, although there is a steady but very gradual approach to the relatively high rates which were maintained before 1861.

LIVING BIRTHS, and numbers living to one Birth in the different Counties in 1870.

COUNTIES.	Population—1870.	Living Births.	Numbers living to one Birth.
Barnstable,	32,774	669	48-94
Berkshire,	64,827	1,616	40-12
Bristol,	102,886	2,682	38-36
Dukes and Nantucket, . . .	7,910	99	79-89
Essex,	200,843	4,772	42-08
Franklin,	32,635	644	50-67
Hampden,	78,409	1,969	39-82
Hampshire,	44,388	1,019	43-56
Middlesex,	274,353	7,444	86-86
Norfolk,	89,443	2,256	39-65
Plymouth,	65,365	1,463	44-68
Suffolk,	270,802	8,614	31-44
Worcester,	192,716	5,012	38-45
Whole State,	1,457,351	38,259	38-09

By this it appears that Suffolk, Middlesex and Bristol are the three most prolific counties, while Dukes and Nantucket, Franklin and Barnstable, are at the foot of the list.

BIRTHS in Massachusetts.—*Quarterly Rates.*

PERIOD.	Numbers.	Percentage.
Quarter ending with March,	8,871	2.43
June,	9,195	2.52
September,	10,055	2.76
December,	10,838	2.83
Whole year,	38,259	2.62

The above table shows the Birth-rate for each quarter, supposing it to have been maintained for the entire year.

BIRTHS arranged in periods of Six Months.—*Ten Years.*

YEARS.	Two First Quarters.	Two Last Quarters.	Difference.
1861,	16,644	18,756	2,112
1862,	15,308	16,938	1,630
1863	14,338	15,952	1,614
1864,	14,052	16,366	2,314
1865,	14,136	16,113	1,977
1866,	15,218	18,867	3,649
1867,	15,971	19,091	3,120
1868,	16,728	19,465	2,737
1869,	16,238	19,903	3,665
1870,	18,066	20,393	2,327
Average,	15,670	18,184	2,514

The disparity between the two semi-annual periods as regards the number of births, is somewhat less in 1870 than has been apparent in previous years. The same causes which were alluded

to in former reports, the enforced separation of husbands from their wives at certain seasons of the year in order that the occupations of seamen, of fishermen, of laborers, &c., may be pursued, are still operative.

Proportion of the SEXES.—*Nineteen Years.*

					1870.	1852-1869.
Born alive,	{	Males,			19,803	808,185
		Females,			18,434	291,276
		Not stated,			22	2,057
		Males to 100 females,			107.4	105.8
Stillborn, .	{	Males,			573	8,232
		Females,			389	5,615
		Not stated,			57	2,284
		Males to 100 females,			147.3	146.6
Illegitimate,	{	Males,			131	1,783
		Females,			154	1,854
		Not stated,			—	34
		Males to 100 females,			85.	96.2

The preponderance of male births in a certain fixed proportion, varying but little from year to year, and in groups of years practically constant, is a fact to be recognized and not to be explained. The seemingly fortuitous occurrence of a male or female birth is seen to be strictly in accordance with nature's great plan.

But if the immediate causes of this disparity are concealed from human eyes, the uses are plain. The excess of males provides for the casualties of war and exposure. Should women take their share of these risks the male sex would preponderate, and nature's plan would be reversed. We may be therefore quite sure that they never will.

BIRTHS by Counties in 1870.—*Proportion of Males to Females.*

COUNTIES.	Males, per cent.	Females, per cent.	Males to 100 Females.
Barnstable,	50·5	49·5	102·1
Berkshire,	52·7	47·3	111·4
Bristol,	42·	48·	108·7
Dukes and Nantucket,	45·5	54·5	83·3
Essex,	50·9	49·1	104·4
Franklin,	49·4	50·6	98·4
Hampden,	52·8	47·7	109·7
Hampshire,	53·1	46·9	113·2
Middlesex,	52·2	47·8	109·1
Norfolk,	50·8	49·2	103·2
Plymouth,	53·9	46·1	116·7
Suffolk,	51·6	48·4	106·5
Worcester,	51·7	48·3	107·4
Whole State,	51·8	48·2	107·4

	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes & Nan- ucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
Aggregates, .	Totals, . . .	38,259	669	1,616	2,682	99	4,772	644	1,969	1,019	7,444	2,256	1,463	5,012
	Males, . . .	19,803	338	851	1,395	45	2,433	319	1,030	541	3,884	1,145	788	2,592
	Females, . . .	18,434	331	764	1,284	54	2,330	324	939	478	3,560	1,109	675	2,414
	Unknown, . . .	22	-	1	3	-	9	1	-	-	-	2	-	6
PARENTAGE.														
American,	15,563	510	709	1,210	81	2,333	421	834	508	2,737	945	990	2,324	1,961
Foreign,	18,339	96	723	1,230	5	1,924	183	962	438	3,838	1,030	366	4,925	2,619
American Father and Foreign Mother,	1,787	29	61	100	5	245	12	86	33	355	123	46	518	174
Foreign Father and American Mother,	2,256	33	106	126	7	251	22	75	40	473	150	42	700	231
Not stated,	314	1	17	16	1	19	6	12	-	41	8	19	147	27

PLURALITY CASES (included above).																
Totals, .	{	Aggregates, .	697	18	51	48	-	93	15	38	20	180	50	38	136	60
		Males, .	365	11	16	26	-	44	10	20	14	58	34	21	76	35
	{	Females, .	332	7	35	22	-	49	5	18	6	72	16	17	60	25
American, .	{	Males, .	153	11	7	7	-	26	3	6	9	21	23	14	17	9
		Females, .	149	7	17	3	-	28	3	12	3	31	5	14	19	7
Foreign, .	{	Males, .	181	-	9	15	-	15	7	10	5	30	9	7	49	25
		Females, .	152	-	18	17	-	16	2	6	3	38	11	8	29	9
Am. Father, .	{	Males, .	14	-	-	2	-	-	-	2	-	2	2	-	5	1
For. Mother, .	{	Females, .	14	-	-	-	-	2	-	-	-	2	-	-	3	7
For. Father, .	{	Males, .	17	-	-	2	-	3	-	2	-	5	-	-	5	-
Am. Mother, .	{	Females, .	17	-	-	2	-	3	-	-	-	1	-	-	9	2

Exhibit of the Parentage of the Children born alive—Concluded.

ILLEGITIMATE BIRTHS (included above).

[illegible]

Percentage of American and Foreign LIVING BIRTHS in each of the past Seven Years.

	1864.	1865.	1866.	1867.	1868.	1869.	1870.
American,	44.91	44.53	44.42	42.36	43.05	42.07	41.01
Foreign,	47.62	47.40	47.80	48.75	47.60	48.01	48.33
One parent Foreign, .	2.47	8.07	8.28	8.89	9.35	9.92	10.66

The above table shows that the proportion of Foreign births has remained quite constant since 1864; the purely American births have steadily diminished their ratio; and the births from mixed parentage have as steadily advanced.

The following table presents a more extended comparison in point of time :—

Percentages of American and Foreign LIVING BIRTHS in the past Twenty-Two Years.

	Average. 1849-53.	Average. 1854-58.	Average. 1859-63.	Average. 1864-68.	Average. 1869-70.
American,	68.02	50.38	46.06	43.85	41.54
Foreign,	35.96	44.12	46.89	47.73	48.17
One parent Foreign,	1.02	5.50	7.05	8.42	10.29

The excess of foreign over native parentage is considerably greater than in any year since 1865; it is 2,776, or 647 more than the excess reported the previous year, and 1,038 more than the average for the previous four years. Foreign births are in the majority in Suffolk, Middlesex, Worcester, Hampden, Norfolk, Bristol and Berkshire.

Comparing 1870 with 1869, we find that the American births have diminished by 463; the Foreign births have increased by 1,110; and the mixed (one parent foreign) have increased by 485.

This evidence is confirmatory of our general remarks concerning the census of 1870. The character of our population is undergoing a great change. Surely, and not very slowly, a mixed stock of Irish, Germans and Canadians is taking the place of the purely English stock which has possessed Massachusetts for more than two centuries. The tide of immigration flows the stronger with our increasing wealth and general prosperity. There is much hard work to be done, unskilled labor is in demand, and Americans are not ready or willing to supply it from their own ranks. Here are facts for the statesman, the educator and the moralist.

Plural Births.—Three hundred and forty-seven women in Massachusetts gave birth in 1870 to 697 children. Three hundred and forty-four had twins and three had triplets. The proportion of women in labor who give birth to more than one child is each year nearly the same,—one in every hundred. The number of cases of triplets is three less than in the previous year.

Illegitimates.—The number reported is 285, one less than in 1869. There are 131 males and 154 females. As has been a general rule, the latter (females) predominate, although for what reason we are at a loss to imagine.

Stillborn.—The number reported was 1,019, 75 less than in 1869.

MARRIAGES.

The whole number of marriages reported for 1870 was 14,721, a decrease of 105 as compared with 1869.

MARRIAGES registered in Massachusetts, 1864-70.

	1864.	1865.	1866.	1867.	1868.	1869.	1870.
Marriages, . .	12,518	13,052	14,428	14,451	13,856	14,826	14,721
Persons married, .	25,026	26,104	28,856	28,902	27,712	29,652	29,442

One person in every 49·49 of the people was married in 1870.

MARRIAGES in Massachusetts.—*Quarterly Aggregates and Percentages.*

FIVE YEARS.						1st Quarter.	2d Quarter.	3d Quarter.	4th Quarter.
1866,	.	.	.	.	.	3,057	3,751	3,151	4,441
1867,	.	.	.	.	.	3,252	3,658	3,137	4,404
1868,	.	.	.	.	.	3,085	3,395	3,004	4,372
1869,	.	.	.	.	.	3,007	3,854	3,401	4,584
1870,	.	.	.	.	.	3,277	3,625	3,259	4,560

PERCENTAGES.

1866,	.	.	.	.	.	21·23	26·05	21·88	30·84 .
1867,	.	.	.	.	.	22·50	25·81	21·71	30·48
1868,	.	.	.	.	.	22·27	24·50	21·67	31·56
1869,	.	.	.	.	.	20·28	25·99	22·94	30·79
1870,	.	.	.	.	.	22·26	24·62	22·14	30·98

Marriages are most numerous in the autumn ; next, the spring months ; then winter and summer.

MARRIAGES in Massachusetts.—*Rates by Counties.*

COUNTIES.	MARRIAGES TO 100 LIVING.					PERSONS LIVING TO 1 MARRIAGE.				
	1866.	1867.	1868.	1869.	1870.	1866.	1867.	1868.	1869.	1870.
Barnstable,	1.038	1.028	0.898	0.878	0.863	99	97	111	114	116
Berkshire,	1.001	1.106	0.969	0.895	0.807	88	90	103	112	123
Bristol, .	1.085	1.087	1.050	1.129	0.891	92	92	95	89	112
Dukes, .	1.048	0.571	0.690	0.690	0.845	95	175	145	145	118
Essex, .	1.206	1.205	1.125	1.202	1.038	83	83	89	83	96
Franklin,	0.960	0.903	0.909	1.069	0.708	104	111	110	93	141
Hampden,	1.256	1.313	1.206	1.274	1.080	79	76	83	78	93
Hampshire,	1.176	1.184	1.103	1.062	0.978	85	84	91	94	102
Middlesex,	1.045	1.125	1.077	1.199	0.989	96	88	93	83	101
Nantucket,	1.095	0.842	0.611	0.989	0.776	91	118	164	101	129
Norfolk, .	0.788	0.797	0.805	0.697	0.780	127	125	124	144	128
Plymouth,	0.966	0.893	0.805	0.976	0.818	103	112	124	102	122
Suffolk, .	1.453	1.436	1.359	1.674	1.305	68	69	74	59	77
Worcester,	1.143	1.112	1.086	1.066	0.962	87	90	92	94	104
Whole State, .	1.139	1.141	1.094	1.170	1.010	88	88	91	85	99

It will be observed that, as a rule, those counties show the highest rates which contain the cities of the State.

AGES at Marriage of 14,670 MEN and of 14,654 WOMEN.

SEX.	Under 16	16 to 20				21 to 25				26 to 30				31 to 35				36 to 40				Over 40			
		16	17	18	19	21	22	23	24	26	27	28	29	31	32	33	34	36	37	38	39	41	42	43	44
Men, . . .	326	5,625	4,528	1,872	915	469	326	285	155	121	56	25	13	4											
Women, . . .	2,924	6,494	2,992	1,025	581	301	160	73	54	28	14	6	2	-											

AGES at Marriage of 12,330 BACHELORS and 13,065 MAIDS.

Bachelors, . . .	325	5,570	4,214	1,458	494	148	70	22	16	6	6	-	1	-											
Maids, . . .	2,906	6,352	2,645	694	284	108	47	13	10	4	2	-	-	-											

AGES at Marriage of 2,310 WIDOWERS and 1,560 WIDOWS.

Widowers, . . .	-	49	303	409	419	320	255	210	139	115	50	25	12	4											
Widows, . . .	14	187	336	828	294	191	113	57	46	25	11	6	2	-											

The average age of all the men married in 1870, was 28·8 years.
average age of all the women married in 1870, was 24·9 “
average age of men marrying for the first time, was 26·3 “
average age of women marrying for the first time, was 23·6 “

These ages correspond to a year, and even to a month, with those of persons marrying in 1869.

Social or Conjugal Condition of Persons Married in Massachusetts, 1870.

MALES.		FEMALES.				
Number of the Marriage.	Whole No. of Marriages.	First Marriage.	Second Marriage.	Third Marriage.	Fourth Marriage.	Unknown.
Whole Number, .	14,721	13,111	1,504	61	3	42
1st Marriage, .	12,362	11,666	679	16	1	—
2d Marriage, .	2,079	1,321	728	30	—	—
3d Marriage, .	208	114	82	11	1	—
4th Marriage, .	29	10	14	4	1	—
5th Marriage, .	1	—	1	—	—	—
Unknown, .	42	—	—	—	—	42

The percentages of first and subsequent marriages during the past eight years were as follows :—

		First Marriage.	Second Marriage.	Third Marriage.	Fourth Marriage.	Fifth Marriage.	Sixth Marriage.	Not stated.
1863,	{ Males, .	81·89	16·06	1·21	·12	—	—	·73
	{ Females, .	88·05	10·80	·88	·04	—	—	·73
1864,	{ Males, .	81·78	15·71	1·78	·12	·02	—	·59
	{ Females, .	87·26	11·50	·60	·05	—	—	·59
1865,	{ Males, .	81·10	16·87	1·76	·14	·01	—	·62
	{ Females, .	86·14	12·70	·52	·02	—	—	·62
1866,	{ Males, .	82·24	15·80	1·31	·08	·01	—	·56
	{ Females, .	87·38	11·66	·36	·01	—	—	·59
1867,	{ Males, .	83·25	15·04	·95	·18	·01	—	·57
	{ Females, .	87·51	11·57	·30	·04	·01	—	·57
1868,	{ Males, .	83·63	14·62	1·41	·12	—	·01	·20
	{ Females, .	87·95	11·54	·29	·02	—	—	·20
1869,	{ Males, .	83·81	14·38	1·42	·15	·01	·02	·20
	{ Females, .	88·70	10·57	·47	·03	·01	—	·20
1870,	{ Males, .	83·97	14·12	1·41	·19	·01	—	·29
	{ Females, .	89·06	10·22	·41	·02	—	—	·29

Certain Marriages.—1870.

AGES OF MALES.	TOTALS.	AGES OF FEMALES.										
		14	15	16	17	18	19	20	21	22	23	24
Totals, .	675	6	33	181	352	57	40	2	1	1	1	1
15, .	1	—	—	—	—	1	—	—	—	—	—	—
16, .	1	—	—	—	—	1	—	—	—	—	—	—
17, .	10	—	—	1	5	1	2	—	—	1	—	—
18, .	53	—	5	9	8	22	7	—	1	—	—	1
19, .	118	—	5	13	34	32	31	2	—	—	1	—
20, .	66	3	2	22	39	—	—	—	—	—	—	—
21, .	81	—	5	25	51	—	—	—	—	—	—	—
22, .	87	1	4	26	56	—	—	—	—	—	—	—
23, .	66	—	2	18	46	—	—	—	—	—	—	—
24, .	66	1	2	27	36	—	—	—	—	—	—	—
25, .	40	—	3	12	25	—	—	—	—	—	—	—
26, .	22	—	—	11	11	—	—	—	—	—	—	—
27, .	17	—	—	5	12	—	—	—	—	—	—	—
28, .	9	—	1	2	6	—	—	—	—	—	—	—
29, .	9	—	1	2	6	—	—	—	—	—	—	—
30, .	6	—	—	2	4	—	—	—	—	—	—	—
31, .	6	—	—	1	5	—	—	—	—	—	—	—
32, .	4	1	1	2	—	—	—	—	—	—	—	—
33, .	1	—	—	—	1	—	—	—	—	—	—	—
34, .	2	—	—	1	1	—	—	—	—	—	—	—
36, .	3	—	2	—	1	—	—	—	—	—	—	—
37, .	2	—	—	—	2	—	—	—	—	—	—	—
38, .	1	—	—	—	1	—	—	—	—	—	—	—
39, .	1	—	—	1	—	—	—	—	—	—	—	—
40, .	2	—	—	1	1	—	—	—	—	—	—	—
42, .	1	—	—	—	1	—	—	—	—	—	—	—

The two preceding tables show a portion of the marriages which occurred at ages when such contracts are seldom made, or where the disparity in this respect between the parties was remarkable. Aside from the merely transient interest which they may afford those who review them from curiosity, they have a certain scientific value. It will be seen that 352 females were married at 17, 181 at 16, 33 at 15 and 6 at 14 years of age. Some of the most remarkable marriages of the year were as follows: among the first marriages of both parties, was that of a man of 75 to a woman of 28, another of a man of 67 to a woman of 30, and two others where the parties were each 60 years of age. The youngest couple were a boy of 17 and a girl of 16. A youth of 19 married a spinster of 28, and another married a widow of 30. A youth of 18 married a widow of the same age, and another married a widow of 35. A woman aged 25 married for the fourth time. A man aged fourscore years and six, found his "affinity" for the second time, in the person of a maiden of 37.

There were marriages of men at the ages of 81, 79, 76, 75 and 74.

A man aged 59, married for his third wife, a woman who had been three times married before.

A man aged 45 married a woman aged 26, both parties having been twice married before. Twenty-nine men married for the fourth time; the eldest at 83, married a widow of 43; the youngest at 36, married a maiden of 18.

A woman was married at the age of 78 to a man of 81. There occurred also the fifth marriage of a man of 54 to a widow of 42, and the fourth in each case of a man of 57 to a woman of the same age.

NATIVITY of Persons Married in the several Counties of the State.—*Numbers.* 1870.

	WHOLE STATE.	Hartford.	Berkshire.	Bristol.	Dukes.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Nantucket.	Norfolk.	Plymouth.	Suffolk.	Worcester.
Marriages,	14,721	288	528	917	32	2,086	231	847	437	2,714	32	698	535	3,535	1,854
American,	8,360	248	304	606	26	1,340	172	474	260	1,467	27	451	453	1,433	1,099
Foreign,	4,271	18	143	198	2	479	35	271	124	798	—	151	58	1,462	532
American Groom and Foreign Bride,	901	13	22	44	4	140	4	49	19	190	—	40	11	285	80
Foreign Groom and American Bride,	1,174	4	51	67	—	123	20	53	29	258	5	55	13	355	141
Nativities not stated,	15	—	3	2	—	4	—	—	2	1	—	1	—	—	2

MARRIAGES according to Nativity.—*Percentages.*

YEARS.	American.	Foreign.	Am. Groom and For. Bride.	For. Groom and Am. Bride.	Not stated.
1862,	62·38	26·56	4·54	4·08	2·44
1863,	61·34	27·85	4·44	5·14	1·23
1864,	60·53	28·32	4·52	6·08	·55
1865,	59·58	29·29	4·49	6·16	·48
1866,	58·81	27·84	5·32	6·51	1·52
1867,	58·39	28·96	5·40	6·31	·94
1868,	58·10	29·08	5·41	6·94	·47
1869,	57·48	29·26	5·24	7·58	·44
1870,	56·79	29·01	6·12	7·98	·10

NATIVITY OF PERSONS Married during Ten Years.—*Numbers.*

	1861.	1862.	1863.	1864.	1865.
Whole number of Marriages,	10,972	11,014	10,873	12,518	13,051
American,	6,330	6,871	6,670	7,574	7,776
Foreign,	3,439	2,926	3,028	3,544	3,823
One party, Foreign, . .	1,036	950	1,042	1,332	1,390
Not stated,	167	267	133	163	62

9

Percentages of those stated, equally dividing the Half Foreign.

Whole number,	100·00	100·00	100·00	100·00	100·00
American,	63·38	68·35	66·95	66·18	65·22
Foreign,	36·62	31·65	33·05	33·82	34·78

Nativity of Persons Married—Concluded.

	1866.	1867.	1868.	1869.	1870.
Whole number of Marriages,	14,428	14,451	13,856	14,826	14,721
American,	8,485	8,438	8,051	8,522	8,860
Foreign,	4,017	4,186	4,030	4,338	4,271
One party Foreign, . .	1,706	1,692	1,711	1,900	2,075
Not stated,	220	135	64	66	15

Percentages—Concluded.

Whole number,	100·00	100·00	100·00	100·00	100·00
American,	65·73	64·85	64·58	64·17	63·89
Foreign,	34·27	35·15	35·42	35·83	36·11

D E A T H S .

The whole number of deaths reported throughout the State during the year 1870, was 27,329. This number is greater than that recorded in 1869, by 1,275; and it is 2,336 more than the average annual number for the previous ten years (1860-69), including the years of the civil war, when a largely increased mortality was reported.

The death-rate for the State for the past six years is given in the following table :—

DEATH-RATE for Six Years.

YEARS.	Population.	Deaths to 100 living.	No. living to one death.
1865,	1,267,031	2.064	48
1866,	1,303,116	1.815	55
1867,	1,340,229	1.691	59
1868,	1,378,398	1.852	54
1869,	1,417,654	1.838	54
1870,	1,457,351	1.875	53

MORTALITY of Massachusetts in Six Geographical Divisions.—
1870.

DIVISIONS.	Population.	Deaths.	Deaths to 100 living.	No. living to one death.
1. Metropolitan (City of Boston, including Roxbury and Dorchester),	250,526	6,098	2.43	41
2. North-Eastern (Essex and parts of Suffolk and Middlesex),	465,116	8,492	1.83	55

Mortality of Massachusetts—Concluded.

DIVISIONS.	Population.	Deaths.	Deaths to 100 living.	No. living to one death.
3. South-Eastern (Dukes and Nantucket, Barnstable, Plymouth, Bristol and Norfolk), . . . }	298,378	4,962	1.66	60.
4. Midland (Worcester and part of Middlesex), . . . }	223,072	3,968	1.78	56
5. Valley (Franklin, Hampshire and Hampden), . . . }	155,432	2,813	1.81	55
6. Western (Berkshire), . . .	64,827	996	1.54	65

DEATH-RATE in the Counties.—1870.

COUNTIES.	Population— 1870.	Deaths to 100 living.	Persons living to one death.
Barnstable,	82,774	1.45	69
Berkshire,	64,827	1.54	65
Bristol,	102,886	1.81	55
Dukes,	3,787	1.85	54
Essex,	200,843	1.74	57
Franklin,	82,635	1.69	59
Hampden,	78,409	1.91	52
Hampshire,	44,388	1.71	58
Middlesex,	274,353	1.89	53
Nantucket,	4,123	2.25	44
Norfolk,	89,443	1.56	64
Plymouth,	65,365	1.62	62
Suffolk,	270,802	2.37	42
Worcester,	192,716	1.79	55
Whole State,	1,457,351	1.87	53

The order of mortality is as follows, beginning with the lowest : Barnstable, Berkshire, Norfolk, Plymouth, Franklin, Hampshire, Essex, Worcester, Bristol, Dukes, Middlesex, Hampden, Nantucket and Suffolk.

The preceding tables show the very marked difference in the death-rate between country and city. Yet it would be erroneous to suppose that this is all due to salubrious surroundings in the one case, and overcrowding in the other. These are very important influences and must have weight in any comparison, but they should not be considered alone. The two populations are not of equal age. There are more children in the cities than in the country in proportion to the whole number of inhabitants.

The birth-rate is high in Suffolk and the death-rate corresponds. In Barnstable and Berkshire and Franklin, both are low. More children are born to the poor, and a greater number die from neglect and exposure in the first years of life. Mere fecundity is not proof of prosperity either in the family or the nation. The proportion of children who are brought through the perils of infancy, and who reach maturity, is a better evidence of the existence of normal and healthful conditions. But this is hard to determine in Massachusetts, owing to the migratory and unsettled habits of our people.

In the tables which have led to these remarks, Dukes and Nantucket Counties have so small a population altogether, that their percentages for a single year prove nothing.

DEATH-RATE in the Centres of Population.

	1865.	1870.		1865.	1870.
Holyoke, . . .	2.14	2.72	Springfield, . . .	1.60	1.85
Boston, . . .	2.36	2.43	Newburyport, . . .	1.74	1.82
Gloucester, . . .	2.45	2.32	Adams, . . .	1.75	1.79
Lowell, . . .	1.86	2.32	New Bedford, . . .	2.12	1.78
Worcester, . . .	2.49	2.18	Somerville, . . .	2.04	1.76
Milford, . . .	2.41	2.11	Lawrence, . . .	2.57	1.72
Charlestown, . . .	2.03	2.09	Lynn, . . .	2.21	1.72
Fall River, . . .	2.15	2.08	Chelsea, . . .	2.08	1.68
Salem, . . .	2.11	2.06	Northampton, . . .	2.46	1.59
Cambridge, . . .	1.89	2.04	Haverhill, . . .	1.63	1.56
Taunton, . . .	2.15	1.98	Pittsfield, . . .	1.56	1.55
Fitchburg, . . .	2.36	1.85	Newton, . . .	1.39	1.01

The above table gives the death-rate in our largest cities and towns, for 1870, *in their order*, and also a comparison with 1865. Such statements are obviously of far greater value in these two years of the census than at any other time. Some of the towns, like Holyoke, have nearly doubled their population in the interval.

An improvement in the rate for 1870 is not to be fairly credited to the cities and towns in which it occurred, without also remembering that 1865 was a year of war, and that the rate for the whole State was then 2·06 per. cent. instead of 1·87 per cent. in 1870.

Seasons. DEATHS by Quarters of the Year.

	Deaths.	Percentage.
Deaths registered in Quarters ending with—		
March,.	6,071	22·2
June,	5,876	21·5
September,	8,810	32·2
December,	6,572	24·1

Sex.—The deaths of males exceeded those of females in 1870 by 101.

PROPORTIONS of the Sexes when distinguished in the annual Deaths.—*Nineteen Years.*

	Annual Av- erage. 1852-61.	Four Years of War. 1862-65.	1866.	1867.	1868.	1869.	1870.
Males,	10,487	13,602	11,601	11,350	12,871	12,777	13,699
Females,	10,602	12,748	12,003	11,369	12,695	13,231	13,598
Number of males to each 100 fe- males,	98·9	106·7	96·6	99·8	101·4	96·6	100·7

DEATHS in Massachusetts in 1870.—*Ages, Sex, Rates.*

SEX.		Under 1 Year.	Under 5 Years.	20 to 30.	All others.	Totals.
Number of deaths, .	{ Males, .	3,448	5,338	1,271	7,106	13,715
	{ Females, .	2,758	4,535	1,612	7,467	13,614
	{ Totals, .	6,206	9,873	2,883	14,573	27,329
Per cent. of deaths for each sex, .	{ Males, .	25.14	38.92	9.27	51.81	100.
	{ Females, .	20.25	33.31	11.84	54.85	100.
Percentage for each sex of all deaths, .	{ Males, .	12.62	19.53	4.66	26.	50.19
	{ Females, .	10.09	16.59	5.90	27.32	49.81
	{ Totals, .	22.71	36.12	10.56	53.32	100.
Females to 100 males, 1870, .		79.9	84.9	126.8	105.1	99.3
Females to 100 males, 1869, .		86.5	90.5	120.7	109.7	103.5
Females to 100 males, 1868, .		83.6	85.2	114.	106.2	98.6
Females to 100 males, 1867, .		82.5	86.3	115.5	107.1	100.1
Females to 100 males, 1866, .		81.	87.	110.4	113.2	103.5

Average Age at DEATH.—1866–1870.

	1866.	1867.	1868.	1869.	1870.
Of all who died,	30.92	30.05	29.92	30.38	30.26
Of all above 20 years of age,	52.08	52.58	53.44	53.20	52.42

Aged over One Hundred Years.—Died in 1870.

Date of Death.	NAMES.	Age.	Place of Death.	Birthplace.	Whether previously Married, or Single.
1870.					
Jan. 28, .	Honora Regan, .	106	Adams, .	Ireland, .	Married.
Mar. 1, .	David Makepeace, .	102	Norton, .	Norton, .	Married.
Mar. 30, .	Joseph Jeffry, .	100	North Reading, .	Lynnfield, .	Not stated.
April -, .	Ellen Collins, .	104	Salem, .	Ireland, .	Married.
May 6, .	Abby Myles, .	100	Fitchburg, .	Ireland, .	Married.
June 15, .	Moses Wingate, .	100	Haverhill, .	Bradford, .	Married.
July 14, .	Hannah Flanders, .	100	Chilmark, .	Chilmark, .	Married.
Aug. 9, .	Rebecca Dorsey, .	103	Brewster, .	Cambridge, .	Married.
Aug. 10, .	Mary Hosea, .	101	Blackstone, .	Unknown, .	Not stated.
Aug. 23, .	Lydia Gibson (colored), .	100	Boston, .	North Carolina, .	Married.
Sept. 30, .	Ellen Payne, .	102	Lowell, .	Ireland, .	Married.
Oct. 2, .	Lemuel Bullard, .	103	Hinsdale, .	Barre, .	Married.
Oct. 12, .	Michael Foley, .	104	Boston, .	Ireland, .	Married.
Oct. 13, .	Mary Dacy, .	102	Fall River, .	Ireland, .	Married.
Nov. 9, .	Rose Brislin, .	104	Quincy, .	Ireland, .	Married.

Nativity of those whose Deaths were registered in the year 1870.

Nativity.	SEX.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes & Nan-	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
Totals.	Whole number,	27,329	476	996	1,862	163	3,496	554	1,499	760	5,169	1,399	1,062	6,428	3,465
	Males, . . .	13,699	244	537	929	82	1,759	260	757	366	2,499	684	535	3,267	1,780
	Females, . . .	13,598	232	456	929	81	1,731	293	742	393	2,667	712	523	3,160	1,679
	Unknown, . . .	32	-	3	4	-	6	1	-	1	3	3	4	1	6
American.	Percentage, . . .	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00
	Whole number,	21,513	458	805	1,483	158	2,893	507	1,132	640	3,964	1,161	949	4,499	2,864
	Males, . . .	10,816	234	438	737	81	1,470	242	571	300	1,938	566	469	2,293	1,477
	Females, . . .	10,665	224	364	742	77	1,417	264	561	339	2,023	592	476	2,205	1,381
Foreign.	Unknown, . . .	32	-	3	4	-	6	1	-	1	3	3	4	1	6
	Percentage, . . .	78-72	96-21	80-82	79-64	96-93	82-75	91-51	75-52	84-21	76-69	82-99	89-36	69-99	82-66
	Whole number,	5,417	15	155	349	3	559	30	325	112	1,105	223	105	1,873	563
	Males, . . .	2,687	8	78	180	1	272	14	163	61	516	111	61	938	284
Not stated.	Females, . . .	2,730	7	77	169	2	287	16	162	51	589	112	44	935	279
	Unknown, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Percentage, . . .	19-82	3-16	15-56	18-75	1-84	15-99	5-42	21-68	14-74	21-38	15-94	9-89	29-14	16-24
	Whole number,	399	8	36	30	2	44	17	42	8	100	15	8	56	38
	Males, . . .	196	2	21	12	-	17	4	23	5	45	7	5	36	19
	Females, . . .	203	1	15	18	2	27	13	19	3	55	8	3	20	19
	Unknown, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Percentage, . . .	1-46	.63	3-62	1-61	1-23	1-26	3-07	2-80	1-05	1-93	1-07	.75	.87	1-10

In the following table a comparison is made with the nativity records of the sixteen previous years :—

NATIVITY of persons deceased during Seventeen Years, 1854–70.

	AVERAGES.		1866.	1867.	1868.	1869.	1870.
	Six Years. 1854-59.	Six Years. 1860-65.					
Whole number, .	20,998	25,459	26,637	22,772	25,603	26,054	27,329
American, . .	16,880	21,243	18,499	18,278	20,522	21,098	21,513
Foreign, . .	3,246	3,772	4,708	4,126	4,761	4,713	5,417
Not stated, . .	870	444	430	368	320	243	399

Percentages of those stated.

American, . .	83.88	84.92	79.71	81.58	81.17	81.74	79.88
Foreign, . .	16.12	15.08	20.29	18.42	18.83	18.26	20.12

In the foregoing table, the children born in America of foreign parents are considered American.

The next table endeavors to remove this difficulty by going back one generation.

Parent-Nativity of all Deceased in 1870.—Arranged by Counties, Sex, and Age.

P A R E N T A G E.	S E X.	Whole Number.	Under 1	1 to 5	5 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	Over 70	Not stated.
Totals,	Totals, .	27,329	6,206	8,667	826	1,583	2,888	2,275	1,947	1,887	2,058	3,850	198
	Males, .	13,699	3,432	1,889	413	692	1,271	1,036	990	999	1,108	1,781	138
	Females, .	13,598	2,743	1,777	412	891	1,612	1,239	957	888	950	2,119	60
	Unknown, .	32	81	1	-	-	-	-	-	-	-	-	-
American,	Males, .	6,795	1,350	631	154	340	605	466	488	560	744	1,352	105
	Females, .	7,010	1,082	566	157	456	811	594	510	535	672	1,650	27
	Unknown, .	22	21	1	-	-	-	-	-	-	-	-	-
Foreign,	Males, .	6,120	1,729	1,092	231	316	632	535	481	417	338	329	20
	Females, .	5,870	1,403	1,051	227	397	766	622	426	287	260	408	23
	Unknown, .	9	9	-	-	-	-	-	-	-	-	-	-
Half-Foreign,	Males, .	555	271	148	26	28	16	20	7	14	11	12	2
	Females, .	513	240	139	22	28	23	10	8	6	5	31	1
	Unknown, .	1	1	-	-	-	-	-	-	-	-	-	-
Not stated,	Males, .	229	82	18	2	8	18	15	14	8	15	38	11
	Females, .	205	68	21	6	10	12	13	13	10	13	30	9

WHOLE STATE.

BRISTOL COUNTY.															BERKSHIRE—Con.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Foreign, .	Males, Females, .	{ . }	.	.	.	172 141	42 25	32 20	7 2	10 15	18 19	16 14	14 9	11 12	10 9	9 14	8 2	Foreign, .	Males, Females, .	{ . }	.	.	.	15 12	6 7	32 20	7 2	10 15	18 19	16 14	14 9	11 12	10 9	9 14	8 2	Half-Foreign, .	Males, Females, .	{ . }	.	.	.	9 5	6 -	-	-	-	1 2	2 1	Not stated, .	Males, Females, .	{ . }	.	.	.	1,862 929 929 4	414 229 181 4	212 123 89 -	49 19 30 -	92 30 62 -	188 85 103 -	128 55 78 -	136 73 63 -	141 76 65 -	171 90 81 -	317 145 172 -	14 4 10 -	Totals, .	Males, Females, .	{ . }	.	.	.	485 520 4	95 67 4	39 32 -	6 12 -	20 28 -	39 56 -	28 37 -	35 38 -	48 60 -	121 141 -	1 4 -	American, .	Males, Females, .	{ . }	.	.	.	401 368	120 102	79 53	13 17	10 29	41 44	21 33	34 21	21 18	40 19	20 27	2 5	Foreign, .	Males, Females, .	{ . }	.	.	.	22 21	11 11	2 3	-	-	-	1 -	-	-	-	-	1 2	2 1	Not stated, .	Males, Females, .	{ . }	.	.	.	21 20	3 1	8 1	-	-	-	1 1	3 4	8 2	2 2	-	-	-	1 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HAMPSHIRE—Con.															MIDDLESEX COUNTY.																
Foreign, .	Males, .	Females, .	120	28	16	5	10	18	12	12	12	6	7	10	1	Foreign, .	Males, .	Females, .	120	28	16	5	10	18	12	12	6	7	10	1	
			115	24	21	8	11	10				3	8	10	-				115	24	21	8	11	10						-	
Half-Foreign, .	Males, .	Females, .	6	2	2	1	-	1	-	-	-	-	-	-	-				6	2	2	1	-	-	-	-	-	-	-	-	
			6	1	2	2	-	-	-	-	-	-	-	-	-				6	1	2	2	-	-	-	-	-	-	-	-	
Not stated, .	Males, .	Females, .	3	-	-	-	-	-	-	-	-	-	-	-	-				3	-	-	-	-	-	-	-	-	-	-	-	
			1	1	-	-	-	-	-	-	-	-	-	-	-				1	1	-	-	-	-	-	-	-	-	-	-	
Totals, .	Totals, .		5,169	1,225	708	167	308	525	449	376	332	408	649	22		Totals, .			5,169	1,225	708	167	308	525	449	376	332	408	649	22	
	Males, .		2,499	688	342	69	121	211	197	184	177	216	283	11				2,499	688	342	69	121	211	197	184	177	216	283	11		
	Females, .		2,667	535	365	98	187	314	252	192	155	192	366	11				2,667	535	365	98	187	314	252	192	155	192	366	11		
	Unknown, .		3	2	1	-	-	-	-	-	-	-	-	-	-				3	2	1	-	-	-	-	-	-	-	-	-	
American, .	Males, .		1,092	230	95	21	57	89	84	84	89	136	204	2		American, .			1,092	230	95	21	57	89	84	84	89	136	204	2	
	Females, .		1,258	173	118	35	102	159	104	101	85	124	254	3				1,258	173	118	35	102	159	104	101	85	124	254	3		
	Unknown, .		1	-	1	-	-	-	-	-	-	-	-	-	-				1	-	1	-	-	-	-	-	-	-	-	-	
Foreign, .	Males, .		1,244	386	217	43	58	112	107	92	82	72	68	7		Foreign, .			1,244	386	217	43	58	112	107	92	82	72	68	7	
	Females, .		1,258	296	220	59	81	151	140	84	65	60	95	7				1,258	296	220	59	81	151	140	84	65	60	95	7		
	Unknown, .		2	2	-	-	-	-	-	-	-	-	-	-	-				2	2	-	-	-	-	-	-	-	-	-	-	-
Half-Foreign, .	Males, .		107	53	28	5	3	5	3	2	5	4	2	-		Half-Foreign, .			107	53	28	5	3	5	3	2	5	4	2	-	
	Females, .		87	43	23	2	2	2	4	2	1	-	7	1				87	43	23	2	2	2	4	2	1	-	7	1		
Not stated, .	Males, .		56	19	2	-	3	5	3	6	3	4	9	2		Not stated, .			56	19	2	-	3	5	3	6	3	4	9	2	
	Females, .		64	23	4	2	2	2	4	5	4	8	10	-				64	23	4	2	2	2	4	5	4	8	10	-		

XXIXTH REGISTRATION REPORT.

[1870.

[illegible]

1870.]

SUMMARY OBSERVATIONS.

47

PLYMOUTH— Con.	Foreign, .	{ Males, Females, Unknown, .	109	19	18	1	6	18	10	12	10	12	12	12	1
			84	14	11	4	8	6	12	11	4	2	12	12	1
			2	2	—	—	—	—	—	—	—	—	—	—	—
			5	2	—	2	—	—	—	—	—	—	1	—	—
			10	4	1	1	1	—	—	—	—	—	3	—	—
			5	1	—	—	1	—	1	—	—	1	1	—	—
			6	1	1	—	—	—	2	—	—	—	2	—	—
			6,428	1,746	1,017	187	309	705	639	530	438	366	489	489	2
			8,267	955	514	102	134	814	818	288	263	194	190	190	2
			3,160	790	503	85	175	391	326	242	175	172	299	299	—
			1	1	—	—	—	—	—	—	—	—	—	—	—
			968	258	119	13	33	85	96	101	86	86	91	91	—
			947	199	88	23	56	106	105	76	64	74	154	154	—
			1	1	—	—	—	—	—	—	—	—	—	—	—
			2,024	550	323	77	93	224	208	181	169	104	95	95	—
			1,960	454	355	53	110	269	217	164	105	97	136	136	—
			201	100	64	11	7	2	8	2	4	2	1	1	—
			197	103	54	9	7	10	2	1	3	1	7	7	—
			74	47	8	1	1	3	1	4	4	2	3	3	—
			56	34	6	—	2	6	2	1	3	—	2	2	—

SUFFOLK COUNTY.

Parent-Nativity of all Deceased in 1870.—Arranged by Counties, Sex, and Age—Concluded.

COUNTIES.	PARENTAGE.	SEX.	Whole Number.	Under 1	1 to 5	5 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	Over 70	Not stated.
WORCESTER COUNTY.	Totals,	Totals, .	3,465	779	510	111	215	367	269	205	231	248	522	8
	. . . . .	Males, .	1,780	431	277	58	94	173	116	108	122	143	256	2
	. . . . .	Females, .	1,679	342	233	53	121	194	153	97	109	105	266	6
	. . . . .	Unknown, .	6	6	-	-	-	-	-	-	-	-	-	-
	American,	Males, .	980	197	92	29	47	91	60	70	79	110	204	1
	. . . . .	Females, .	933	136	65	20	65	115	86	61	81	80	224	-
	. . . . .	Unknown, .	2	2	-	-	-	-	-	-	-	-	-	-
	Foreign,	Males, .	721	206	167	27	41	78	52	38	42	30	40	-
	. . . . .	Females, .	684	187	145	33	51	79	65	35	28	21	35	5
	. . . . .	Unknown, .	3	3	-	-	-	-	-	-	-	-	-	-
	Half-Foreign,	Males, .	56	26	17	2	5	-	1	-	1	1	2	1
	. . . . .	Females, .	43	16	20	-	2	-	1	-	-	-	3	-
	. . . . .	Unknown, .	1	1	-	-	-	-	-	-	-	-	-	-
	Not stated,	Males, .	23	2	1	-	1	4	3	-	-	2	10	-
	. . . . .	Females, .	19	3	3	-	3	-	1	1	-	3	4	1

Comparing the results shown in the foregoing table with those recorded in 1869, we find that the deaths of those whose parents were both American have increased by 84; of those whose parentage was Foreign the number has increased by 967; while the deaths of those whose parentage was mixed, one parent being American and the other Foreign, have increased by 63. Of the class "not stated," 434 are reported in 1870, being 161 more than in 1869.

The next table makes a comparison of four years, presenting a striking contrast in the mortality at various ages between the native and the foreign elements of our population. In calculating the percentages, those of half-foreign parentage are divided equally.

				Under 5 years.	5 to 20	20 to 50	Over 50
1867,	{	American parents, . . .		2,947	1,197	3,182	4,958
		Foreign " . . .		4,432	987	2,536	1,393
		Half-Foreign " . . .		504	101	100	58
	{	<i>Percentages.</i>					
		American parents, . . .		40.6	54.6	55.5	77.8
		Foreign " . . .		59.4	45.4	44.5	22.2
1868,	{	American parents, . . .		3,501	1,189	3,280	5,248
		Foreign " . . .		5,067	1,193	2,763	1,855
		Half-Foreign " . . .		667	110	82	69
	{	<i>Percentages.</i>					
		American parents, . . .		41.5	49.9	54.2	73.6
		Foreign " . . .		58.5	50.1	45.8	26.4
1869,	{	American parents, . . .		3,538	1,250	3,337	5,492
		Foreign " . . .		4,854	1,194	3,018	1,922
		Half-Foreign " . . .		721	110	90	81
	{	<i>Percentages.</i>					
		American parents, . . .		42.8	51.1	52.5	73.8
		Foreign " . . .		57.2	48.9	47.5	26.2
1870,	{	American parents, . . .		3,601	1,107	3,474	5,645
		Foreign " . . .		5,284	1,171	3,462	2,082
		Half-Foreign " . . .		799	104	84	82
	{	<i>Percentages.</i>					
		American parents, . . .		41.3	48.7	50.1	72.8
		Foreign " . . .		58.7	51.3	49.9	27.2

From this comparison, carried through a series of years, two facts are evident, namely, that the mortality among children is much greater in those of Foreign parentage ; and that the greater part of our population past middle life still continues to be of native stock.

CAUSES OF DEATH.

The following table shows the weather record of 1870, as made at the observatories of Cambridge and Amherst.

MONTHS.	CAMBRIDGE.		AMHERST.	
	Mean Temperature.	Rain-Fall.	Mean Temperature.	Rain-Fall.
January	32.7	5.69	30.8	5.87
February,	24.5	4.22	25.3	5.25
March,	30.0	4.66	30.9	2.71
April,	46.6	6.13	48.3	3.70
May,	57.6	1.97	58.3	1.72
June,	68.5	3.83	70.4	2.73
July,	72.9	1.20	73.5	2.53
August,	71.8	2.03	71.1	2.83
September,	62.7	1.81	62.3	1.75
October,	53.3	3.76	52.	4.49
November,	41.1	3.52	39.1	3.28
December,	32.6	2.71	28.	1.84
Mean temperature for the year, .	49.5	—	49.2	—
Total rain-fall in inches, . .	—	41.53	—	38.70

The percentage of deaths from *zymotic* diseases in 1870 was 25.6; from constitutional diseases 26.6; from local diseases 28; from developmental diseases 15.6, and from violent deaths 4. These percentages do not differ materially from those of the previous year.

The following table presents a comparative view of the mortality from the most destructive *zymotic* diseases during the past seven years :—

Y E A R S .	Dysentery.	Typhus.	Whooping Cough.	Croup.	Diphtheria.	Measles.	Scarlet Fever.
1864, . .	1,186	1,344	235	768	1,231	320	1,503
1865, . .	1,548	1,694	363	504	672	136	807
1866, . .	949	1,091	287	431	399	109	885
1867, . .	658	965	297	356	251	194	828
1868, . .	685	896	247	485	297	287	1,369
1869, . .	481	1,205	320	473	296	222	1,405
1870, . .	471	1,333	330	434	242	269	683

During the year 1870, one hundred and thirty-three persons were victims of railroad accidents, twenty-six died by poison, eighty-nine from burns and scalds, three hundred and six were drowned (including those reported “lost at sea”), ninety-one committed suicide and twenty-nine were murdered.

SUMMARY OBSERVATIONS.

Order of Succession of Ten Principal Diseases.—Nine Years.

Members in 1870.

1869.	1868.	1864.	1865.	1866.	1867.	1868.	1869.	Consumption, 6,008
Consumption,	Consumption,	Consumption,	Consumption,	Consumption,	Consumption,	Consumption,	Consumption,	Consumption,
Scarlatina,	Pneumonia,	Pneumonia,	Typhus,	Pneumonia,	Infantile,	Pneumonia,	Pneumonia,	Cholera Infantum, 1,914
Infantile,	Typhus,	Scarlatina,	Dysentery,	Infantile,	Pneumonia,	Cholera Infantum,	Cholera Infantum,	Pneumonia, . 1,718
Pneumonia,	Diphtheria,	Old Age,	Pneumonia,	Old Age,	Old Age,	Old Age,	Scarlatina,	Old Age, . 1,444
Old Age,	Scarlatina,	Typhus,	Old Age,	Typhus,	Cholera Infantum,	Old Age,	Old Age,	Typhus, . 1,333
Typhus,	Old Age,	Infantile,	Infantile,	Cholera Infantum,	Typhus,	Heart Disease,	Typhus,	Paralysis and Apoplexy, . 1,024
Cholera Infantum,	Infantile,	Diphtheria,	Cholera Infantum,	Dysentery,	Heart Disease,	Heart Disease,	Paralysis and Apoplexy,	Heart Disease, . 978
Brain Disease,	Cholera Infantum,	Cholera Infantum,	Heart Disease,	Heart Disease,	Scarlatina,	Typhus,	Heart Disease,	Infantile, . 737
Heart Disease,	Dysentery,	Dysentery,	Scarlatina,	Apoplexy and Paralysis,	Paralysis and Apoplexy,	Dysentery,	Infantile,	Scarlatina, . 683
Diphtheria.	Croup.	Apoplexy and Paralysis.	Diphtheria.	Croup.	Dysentery.	Infantile.	Cephalitis,	Cephalitis, . 601

The NUMBER of Deaths from several Specified Causes, of each Sex, in each Month, and at Different Specified Periods of Life, which were registered during the year 1870.

XXIX TH REGISTRATION REPORT.												[1870.]
	Totals,	242	471	1,333	269	683	129	434	1,914	308	5,003	1,718
{ SEX	Males, .	116	266	636	141	361	65	233	989	155	2,277	858
	Females, .	125	205	697	128	322	64	201	923	153	2,726	860
	Not stated,	1	-	-	-	-	-	-	2	-	-	-
	January, .	31	1	96	24	88	15	37	16	12	385	203
{ MONTHS	February, .	20	2	55	40	70	15	39	5	11	372	205
	March, .	13	8	63	40	80	15	46	11	7	430	243
	April, .	14	5	68	34	59	11	21	19	10	433	167
	May, .	13	3	62	32	56	8	33	20	17	445	153
	June, .	6	19	54	28	48	9	24	57	12	354	103
	July, .	12	84	71	26	46	5	7	597	61	405	81
	August, .	13	173	152	20	28	5	18	698	55	488	72
	September, .	30	114	209	7	40	6	29	325	53	456	82
	October, .	23	46	234	3	40	8	41	129	41	413	101
	November, .	33	13	164	6	53	16	67	29	17	394	159
	December, .	34	3	109	9	75	16	72	8	12	427	149
	Not stated,	-	-	1	-	-	-	-	-	-	-	1

Age.	Tot ,	242	471	1,338	269	683	129	484	1,914	308	5,008	1,718
	Under 5,.	188	273	134	218	460	43	375	1,914	308	824	686
	5 to 10,.	57	14	71	24	152	-	53	-	-	41	38
	10 to 15,.	17	6	109	2	41	2	4	-	-	94	25
	15 to 20,.	10	4	190	3	11	1	-	-	-	464	37
	20 to 30,.	5	17	361	6	13	8	1	-	-	1,358	101
	30 to 40,.	7	16	145	3	2	12	-	-	-	922	105
	40 to 50,.	2	14	90	5	3	10	1	-	-	620	138
	50 to 60,.	2	26	80	3	1	19	-	-	-	470	143
	60 to 70,.	3	31	64	1	-	11	-	-	-	388	174
	70 to 80,.	-	29	59	2	-	14	-	-	-	250	180
	Over 80,.	-	41	23	1	-	9	-	-	-	55	88
	Unknown,	1	-	7	1	-	-	-	-	-	17	8

The PERCENTAGES of Deaths from several Specified Causes, of each Sex, in each Month, and at Different Specified Periods of Life, which were registered during the year 1870.

		Diphtheria.	Dysentery.	Typhus.	Measles.	Scarlatina.	Erysipelas.	Croup.	Cholera Infantum.	Teething.	Consumption.	Pneumonia.
SEX.	Totals,	100.00	100.00	100.00	100.00	190.00	100.00	100.00	100.00	100.00	100.00	100.00
	Males,	47.93	56.48	47.71	52.42	52.85	50.39	53.69	51.67	50.83	45.51	49.94
	Females,	51.65	43.52	52.29	47.58	47.15	49.61	46.31	48.22	49.67	54.49	50.06
	Not stated,	.42	-	-	-	-	-	-	.11	-	-	-
MONTHS.	January,	12.81	.21	7.20	8.92	12.89	11.63	8.52	.84	3.90	7.70	11.82
	February,	8.26	.43	4.12	14.87	10.25	11.63	8.99	.26	3.57	7.44	11.98
	March,	5.37	1.70	4.73	14.87	11.71	11.63	10.60	.57	2.27	8.59	14.15
	April,	5.79	1.06	4.73	12.64	8.64	8.52	4.85	.99	3.25	8.65	9.72
	May,	5.37	.64	4.65	11.89	8.19	6.20	7.60	1.05	5.52	8.89	8.90
	June,	2.48	4.03	4.05	10.41	7.03	6.98	5.53	2.98	3.90	7.08	6.00
	July,	4.96	17.83	5.33	9.67	6.73	3.88	1.61	31.19	19.80	8.10	4.71
	August,	5.37	36.73	11.40	7.43	4.10	3.88	4.15	36.47	17.86	9.75	4.19
	September,	12.40	24.20	15.68	2.60	5.86	4.65	6.68	16.98	17.21	9.11	4.77
	October,	9.50	9.77	17.55	1.12	5.86	6.20	9.45	6.74	13.31	8.26	5.88
	November,	13.64	2.76	12.30	2.23	7.76	12.40	15.44	1.51	5.51	7.88	9.26
	December,	14.05	.64	8.18	8.35	10.98	12.40	16.59	.42	8.90	8.53	8.67
	Not stated,	-	-	.08	-	-	-	-	-	-	.02	-

The NUMBER of Deaths from several Specified Causes, of each Sex, in each Month, and at Different Specified Periods of Life, which were registered during the Eight Years, 1863-70.

	Diphtheria.	Dysentery.	Typhus.	Measles.	Scarlatina.	Erysipelas.	Croup.	Cholera Infantum.	Teething.	Consumption.	Pneumonia.
Totals,	4,808	7,134	9,970	1,678	8,379	1,272	4,315	10,459	2,113	37,122	13,140
Males,	2,210	3,594	5,187	866	4,241	647	2,218	5,482	1,097	16,968	6,767
Females,	2,594	3,533	4,781	811	4,135	625	2,096	4,958	1,015	20,147	6,371
Not stated,	4	7	2	1	3	-	1	19	1	7	2
January,	497	57	649	102	1,033	120	497	48	101	3,088	1,548
February,	415	69	531	137	924	152	423	49	97	2,947	1,595
March,	382	65	603	173	1,008	123	420	67	107	3,393	1,832
April,	364	85	548	203	893	135	338	70	89	3,219	1,445
May,	307	79	513	204	820	131	274	92	95	3,307	1,170
June,	304	180	451	211	622	103	206	222	94	2,833	707
July,	335	912	587	211	504	68	170	2,281	256	2,891	531
August,	288	2,408	1,045	176	368	58	188	4,238	405	3,209	417
September,	405	2,106	1,415	63	371	84	266	2,370	410	3,154	564
October,	512	867	1,604	47	443	74	400	805	233	3,039	801
November,	483	223	1,171	61	604	110	567	157	114	3,010	1,149
December,	513	79	841	89	785	112	566	58	111	3,013	1,377
Not stated,	3	4	12	1	4	2	-	2	1	19	4

		MONTHS.												PERCENTAGE.		
		100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00
Totals,	.	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00	100-00
Males,	.	45-97	50-38	52-03	51-61	50-86	51-40	52-41	51-92	45-71	51-50	51-50	51-50	51-50	51-50	51-50
Females,	.	53-95	49-52	47-06	48-00	49-14	48-53	47-41	48-03	54-27	48-49	48-49	48-49	48-49	48-49	48-49
Not stated,	.	40-08	1-10	1-02	1-00	1-04	1-02	1-18	1-05	1-02	1-01	1-01	1-01	1-01	1-01	1-01
January,	.	10-84	80	6-51	6-08	12-33	11-52	46	4-78	8-82	11-78	11-78	11-78	11-78	11-78	11-78
February,	.	8-68	97	5-82	8-17	11-08	9-80	47	4-59	7-94	12-14	12-14	12-14	12-14	12-14	12-14
March,	.	7-95	91	6-06	10-31	12-03	9-73	64	5-06	9-14	13-94	13-94	13-94	13-94	13-94	13-94
April,	.	7-57	1-19	5-50	12-10	10-66	7-83	67	4-21	8-67	11-00	11-00	11-00	11-00	11-00	11-00
May,	.	6-38	1-11	5-15	12-16	9-78	6-35	88	4-50	8-91	8-91	8-91	8-91	8-91	8-91	8-91
June,	.	6-32	2-52	4-52	12-57	7-42	4-77	2-12	4-45	7-63	5-38	5-38	5-38	5-38	5-38	5-38
July,	.	6-97	12-78	5-89	12-57	6-01	8-94	21-81	12-12	7-78	4-04	4-04	4-04	4-04	4-04	4-04
August,	.	5-99	33-75	10-43	10-49	4-39	4-36	40-52	19-17	8-65	3-17	3-17	3-17	3-17	3-17	3-17
September,	.	8-42	29-52	14-19	8-75	4-43	6-17	22-66	19-40	8-50	4-29	4-29	4-29	4-29	4-29	4-29
October,	.	10-65	12-16	16-09	2-80	5-29	9-27	7-70	11-03	8-19	6-09	6-09	6-09	6-09	6-09	6-09
November,	.	10-05	3-12	11-75	3-64	7-21	13-14	1-49	5-09	8-10	8-75	8-75	8-75	8-75	8-75	8-75
December,	.	10-67	1-11	8-43	5-30	9-37	18-12	56	5-25	8-12	10-48	10-48	10-48	10-48	10-48	10-48
Not stated,	.	00	00	1-12	0-06	0-05	1-16	0-02	0-05	0-05	0-03	0-03	0-03	0-03	0-03	0-03

Diphtheria.—Since 1864, this disease appears to have been steadily diminishing in its fatality, and the number of deaths the present year is less than in any of the previous ten years. The alarming increase of mortality reported during the five years, 1860–64, has not been approached at any season since, and diphtheria is no longer included, as at that time, among the most fatal diseases. This immunity is to be accounted for partly by greater correctness in diagnosis of the disease at the present time, but chiefly by the absolute remission of epidemics of diphtheria, an affection which is avowedly very fatal.

Dysentery also appears to have been subject to a gradual decrease in its fatality, the number of deaths having diminished from 1,186 in 1864 to 471 in 1870. The low rates of ten years ago are again reached, and if we may draw any inferences from the experiences of previous years, in the periodic rise and fall of mortality from dysentery, approaching something like regularity, we may, with tolerable certainty, predict an increased death-rate from this cause before many summers shall have passed. The relative distribution of the mortality in the various counties is evidence of the sporadic nature of the disease, during 1870. As usual, the mortality is greatest during August and September (182 of the 471 deaths having occurred in these months); and more than one-half the deaths (273) were of children under five years of age.

Typhus.—The number of deaths was greater by 128 than that reported for 1869. The fatality was greatest in the ages between twenty and thirty, and was nearly equally divided between the two sexes. The whole number of deaths reported (including 134 under five years of age, classed as usual, with doubtful propriety, as infantile fever), was 1,333. The autumnal months, and especially September and October, exhibit the greatest mortality.

Measles.—Two hundred and sixty-nine deaths were reported in 1870; of these, two hundred and eighteen were children under 5 years of age. The mortality was distributed through all the counties except Dukes, Nantucket and Plymouth. The first six months of the year show a considerably larger proportion of deaths than the last six months.

Scarlatina.—There were 683 deaths, a diminution of more than one-half as compared with the report of 1869. Of the deaths recorded, 460 were under the age of five years, and 612 were under ten years of age. The mortality was distributed quite equally through all the months of the year. None of the counties were exempt, but (as compared with deaths from other causes) the disease was especially fatal in Suffolk, Worcester, Middlesex, Hampshire, Hampden and Bristol.

Cholera Infantum caused the death of 1,914 young children in 1870, 490 more than were reported in 1869. The deaths from this cause comprised 7·1 per cent. of the whole number of deaths, and this ratio is showing an alarming increase from year to year. The average percentage for the past twenty-nine years, as compared with the deaths from all causes, is 3·70, and for the past five years (1865–69) it is 4·95. In the order of relative mortality, cholera infantum takes its place as the second in the list, standing next to consumption, a position it has never before occupied. This striking promotion of a disease so deadly in its inroads on infant life, should need no other argument to enforce the lessons which it so plainly teaches, namely, that more emphatic attention should be paid to the well-known and preventable causes and that the need for the purification of crowded centres of population is more imperative than ever.

The percentage of deaths from cholera infantum to deaths from all specified causes in the various counties was as follows: Barnstable, 2·9; Berkshire, 4·4; Bristol, 4·7; Dukes and Nantucket, 0·8; Essex, 6·6; Franklin, 4·4; Hampden, 6·5; Hampshire, 6·7; Middlesex, 9·1; Norfolk, 5·9; Plymouth, 3·9; Suffolk, 7·8; Worcester, 8.

Consumption.—There were 5,003 deaths in 1870, with an excess of 449 females. The following tabular statement shows that the changes of the seasons exercise but little influence on the fatality of New England's scourge:—

First Quarter, 1,187	Third Quarter, 1,349
Second Quarter, 1,232	Fourth Quarter, 1,235

If comparison is made according to the divisions of the seasons strictly, the numbers are as follows :—

Spring,	1,308	Autumn,	1,268
Summer,	1,247	Winter,	1,185

DEATHS from Consumption at certain ages.—*Three Years.*

		Under 15	15 to 50	Over 50
1868,	{ Numbers,	418	2,912	1,095
	{ Percentages,	9·84	65·88	24·78
1869,	{ Numbers,	443	3,060	1,134
	{ Percentages,	9·55	65·99	24·46
1870,	{ Numbers,	459	3,364	1,163
	{ Percentages,	9·21	67·47	23·33

Twenty-seven per cent. of all who died from consumption in 1870 were between twenty and thirty years of age.

DEATHS from Consumption in the Counties, 1870.—*Percentages.*

COUNTIES.	Population— 1870.	Number of Deaths.	Percentage to Deaths from all Specified Causes.	Persons living to one Death.
Barnstable,	32,774	102	22·5	321
Berkshire,	64,827	156	17·0	415
Bristol,	102,886	411	23·4	250
Dukes and Nantucket, . . .	7,910	22	14·7	359
Essex,	200,843	742	21·3	271
Franklin,	82,635	98	17·8	351
Hampden,	78,409	278	19·3	282

Deaths from Consumption in the Counties—Concluded.

C O U N T I E S .	Population— 1870.	Number of Deaths.	Percentage to Deaths from all Specified Causes.	Persons living to one Death.
Hampshire,	44,388	150	20·9	296
Middlesex,	274,353	923	18·3	297
Norfolk,	89,443	246	18·1	363
Plymouth,	65,365	221	21·9	296
Suffolk,	270,802	1,040	15·3	260
Worcester,	192,716	619	18·5	311

The following table presents a view of the relative mortality of the counties in 1870, as regards consumption compared with all other diseases.

ORDER of Mortality by Counties.—1870.

By all Diseases.	By Consumption alone.	By Consumption in comparison with all other Diseases.
Suffolk.	Bristol.	Bristol.
Dukes and Nantucket.	Suffolk.	Barnstable.
Hampden.	Essex.	Plymouth.
Middlesex.	Hampden.	Essex.
Bristol.	Hampshire.	Hampshire.
Worcester.	Plymouth.	Hampden.
Essex.	Middlesex.	Worcester.
Hampshire.	Worcester.	Middlesex.
Franklin.	Barnstable.	Norfolk.
Plymouth.	Franklin.	Franklin.
Norfolk.	Dukes and Nantucket.	Berkshire.
Berkshire.	Norfolk.	Suffolk.
Barnstable.	Berkshire.	Dukes and Nantucket.

The slight increase in the actual and the relative mortality from consumption reported in 1870, does not seriously affect the positive tendency toward amelioration as regards the fatality of this disease, a fact made evident in the following table :—

MORTALITY from Consumption in Massachusetts.—*Eighteen Years.*

Y E A R S .	Population.	No. of Deaths from Consump- tion.	Deaths from Con- sumption to each 100,000 liv- ing. .
1853,	1,075,007	4,593	427
1854,	1,103,351	4,611	418
1855,	1,132,364	4,750	419
1856,	1,151,455	4,701	408
1857,	1,170,862	4,625	395 .
1858,	1,190,592	4,574	384
1859,	1,210,656	4,704	388
1860,	1,231,066	4,557	370
1861,	1,238,110	4,522	365
1862,	1,245,310	4,269	343
1863,	1,252,500	4,667	372
1864,	1,259,710	4,733	376
1865,	1,267,031	4,661	368
1866,	1,303,116	4,600	353
1867,	1,340,229	4,362	325
1868,	1,378,398	4,437	322
1869,	1,417,654	4,659	328
1870,	1,457,351	5,003	343

Pneumonia proved fatal in 1870 to 1,718, a number 18 less than that reported the previous year. The sexes were almost equally divided.

The largest mortality occurred in March, and the least was in September. The first three months of the year contributed very nearly 38 per cent of the whole mortality.

Six hundred and eighty-six of the deaths (39 per cent. of the whole number) were of children, and four hundred and forty-two (twenty-six per cent. of the whole) occurred in persons above 60 years old ; thus, considerably more than half the mortality occurred at the extremes of life.

DEATHS from Pneumonia in the Counties, 1870.

COUNTIES.	Number.	Percentage to Deaths from all Specified Causes.
Barnstable,	20	4.4
Berkshire,	77	8.4
Bristol,	104	5.9
Dukes and Nantucket,	3	2.
Essex,	202	5.8
Franklin,	37	7.1
Hampden,	107	7.4
Hampshire,	62	8.6
Middlesex,	320	6.3
Norfolk,	74	5.4
Plymouth,	69	6.8
Suffolk,	429	6.3
Worcester,	214	6.4

(TABLES)

XXIXth

ANNUAL REPORT

OF

BIRTHS, MARRIAGES, AND DEATHS,

REGISTERED IN

MASSACHUSETTS,

FOR THE YEAR ENDING DECEMBER 31, 1870.

TABLE I.—POPULATION, 1870.—BIRTHS,

General Abstract, exhibiting, in connection with the Population and Deaths registered in each County and Town in Massachusetts Children Born, the Nativity of Persons Married, and the Sex and

THE STATE, AND COUNTIES.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX.			PARENTAGE.				
			M	F.	Unk.	Am.	For.	Am Fa. and For M.	For Fa. and Am M.	U.
MASSACHUSETTS, .	1,457,351	38,259	19,803	18,434	22	15,563	18,339	1,787	2,256	314
BARNSTABLE,	32,774	669	338	331	—	510	96	29	33	1
BERKSHIRE, .	64,827	1,616	851	764	1	709	723	61	106	17
BRISTOL, .	102,886	2,682	1,395	1,284	3	1,210	1,230	100	126	16
DUKES, .	3,787	51	20	31	—	43	4	2	2	—
ESSEX, .	200,843	4,772	2,433	2,330	9	2,333	1,924	245	251	19
FRANKLIN, .	32,635	644	319	324	1	421	183	12	22	6
HAMPDEN, .	78,409	1,969	1,030	939	—	834	962	86	75	12
HAMPSHIRE, .	44,388	1,019	541	478	—	508	438	33	40	—
MIDDLESEX, .	274,353	7,444	3,884	3,560	—	2,737	3,838	355	473	41
NANTUCKET, .	4,123	48	25	23	—	38	1	3	5	1
NORFOLK, .	89,443	2,256	1,145	1,109	2	945	1,030	123	150	8
PLYMOUTH, .	65,365	1,463	788	675	—	990	366	46	42	19
SUFFOLK, .	270,802	8,614	4,442	4,172	—	2,324	4,925	518	700	147
WORCESTER,	192,716	5,012	2,592	2,414	6	1,961	2,619	174	231	27

MARRIAGES, AND DEATHS, 1870.

according to the United States Census of 1870, the Births, Marriages, during the year 1870,—distinguishing the Sex and the Parentage of aggregate and average Ages of the number who Died.

MARRIAGES.						DEATHS.						
Couples.	NATIVITY.					Persons.	SEX.			No whose ages are registered.	AGE.	
	A.m.	For.	Am M. and For. Fe.	For. M. and Am. Fe.	Unk.		M.	F.	U.		Agg'te.	Average.
14,721	8,360	4,271	901	1,174	15	27,329	13,699	13,598	32	27,091	819,574	30.25
283	248	18	13	4	—	476	244	232	—	443	18,768	41.89
523	304	143	22	51	3	996	537	456	3	978	32,983	33.72
917	606	198	44	67	2	1,862	929	929	4	1,846	63,385	34.34
32	26	2	4	—	—	70	33	37	—	70	3,300	47.14
2,086	1,340	479	140	123	4	3,496	1,759	1,731	6	3,393	104,932	30.93
231	172	35	4	20	—	554	260	293	1	548	21,739	39.67
847	474	271	49	53	—	1,499	757	742	—	1,493	42,806	28.67
434	260	124	19	29	2	760	366	393	1	757	26,807	35.41
2,714	1,467	798	190	258	1	5,169	2,499	2,667	3	5,145	148,967	28.95
32	27	—	—	5	—	93	49	44	—	92	4,595	49.95
698	451	151	40	55	1	1,399	681	712	3	1,388	47,128	33.95
535	453	58	11	13	—	1,062	535	523	4	1,059	43,355	40.94
3,535	1,433	1,462	285	355	—	6,428	3,267	3,160	1	6,425	157,580	24.53
1,854	1,099	532	80	141	2	3,465	1,780	1,679	6	3,454	103,229	29.89

TABLE I.—*Births, Marriages, and Deaths,*

Counties and Towns.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX			PARENTAGE.				
			M.	F.	U.	Am.	For.	Am.Fa. and For. M.	For.Fa. and Am M.	Unk.
BARNSTABLE,	32,774	669	338	331	—	510	96	29	33	1
Barnstable, .	4,793	60	27	33	—	51	3	1	4	1
Brewster, .	1,259	24	16	8	—	19	2	2	1	—
Chatham, .	2,411	62	30	32	—	60	—	1	1	—
Dennis, .	3,269	74	40	34	—	67	2	2	3	—
Eastham, .	668	12	8	4	—	11	1	—	—	—
Falmouth, .	2,237	41	19	22	—	32	8	1	—	—
Harwich, .	3,080	75	41	34	—	68	2	2	3	—
Mashpee,*.	318	4	2	2	—	4	—	—	—	—
Orleans, .	1,323	22	9	13	—	19	2	—	1	—
Provincetown, .	3,865	110	53	57	—	32	60	8	10	—
Sandwich, . .	3,694	67	33	34	—	45	11	5	6	—
Truro, .	1,269	29	13	16	—	24	2	2	1	—
Wellfleet, .	2,135	49	23	26	—	43	2	2	2	—
Yarmouth, .	2,423	40	24	16	—	35	1	3	1	—
BERKSHIRE, .	64,827	1,616	851	764	1	709	723	61	106	17
Adams, .	12,090	345	168	177	—	123	175	12	31	4
Alford, .	430	11	5	6	—	9	2	—	—	—
Becket, .	1,346	35	15	20	—	19	12	1	2	1
Cheshire, .	1,758	34	12	22	—	10	22	2	—	—
Clarksburg, .	686	8	3	5	—	3	3	—	2	—
Dalton, .	1,252	25	13	12	—	7	16	1	1	—
Egremont, .	931	16	8	8	—	12	—	2	1	1
Florida, .	1,322	44	27	17	—	9	33	2	—	—
Gt. Barrington, .	4,320	91	53	38	—	52	29	4	3	3
Hancock, .	882	12	7	5	—	4	6	—	2	—
Hinsdale, .	1,695	53	26	27	—	15	38	—	—	—
Lanesborough, .	1,393	48	24	24	—	22	20	—	6	—
Lee, .	3,866	94	49	45	—	44	37	4	9	—
Lenox, .	1,965	56	36	20	—	21	27	2	5	1
Monterey, .	653	12	5	7	—	11	—	1	—	—
Mt. Washington, .	256	1	—	1	—	1	—	—	—	—
New Ashford, .	208	3	1	2	—	2	—	1	—	—
N. Marlborough, .	1,855	54	36	18	—	30	20	1	3	—
Otis, .	960	10	7	3	—	8	2	—	—	—
Peru, .	455	10	5	5	—	8	2	—	—	—
Pittsfield, .	11,112	316	177	138	1	113	158	15	30	—
Richmond, .	1,091	18	7	11	—	6	11	1	—	—
Sandisfield, .	1,482	12	3	9	—	11	—	—	—	1
Savoy, .	861	19	9	10	—	17	2	—	—	—
Sheffield, .	2,535	72	41	31	—	37	29	1	5	—
Stockbridge, .	2,003	40	24	16	—	20	14	1	3	2
Tyringham, .	557	9	7	2	—	5	3	1	—	—
Washington, .	694	9	6	3	—	5	2	2	—	—
W. Stockbridge, .	1,924	67	29	38	—	23	39	3	2	—
Williamstown, .	3,559	78	39	39	—	49	21	4	1	3
Windsor, .	686	14	9	5	—	13	—	—	—	1

* Incorporated, May 28, 1870.

registered during the year 1870—Continued.

MARRIAGES.						DEATHS.						
Couples.	NATIVITY.					Persons.	SEX.			No whose ages are registered.	AGE.	
	Am.	For.	Am. M and For.Fe.	For. M. and Am.Fe.	Unk.		M.	F.	Unk		Agg'te.	Average.
283	248	18	13	4	—	476	244	232	—	448	18,768	41·89
30	29	—	1	1	—	66	34	32	—	66	3,119	47·25
13	11	1	1	—	—	23	14	9	—	22	959	43·59
23	23	—	—	—	—	25	10	15	—	25	1,277	51·08
33	31	2	—	—	—	55	28	27	—	54	1,872	34·66
6	6	—	—	—	—	7	4	3	—	7	357	51·00
16	15	1	—	—	—	32	12	20	—	30	1,404	46·80
46	45	—	—	1	—	41	23	18	—	41	1,544	37·66
1	1	—	—	—	—	8	1	7	—	8	294	36·50
9	9	—	—	—	—	28	13	15	—	27	1,087	40·26
41	19	14	6	2	—	53	28	25	—	53	1,394	26·30
24	21	—	2	1	—	59	38	21	—	57	2,372	41·60
11	8	—	3	—	—	17	9	8	—	17	574	33·76
11	11	—	—	—	—	32	13	19	—	31	1,246	40·19
19	19	—	—	—	—	30	17	13	—	30	1,269	42·30
523	304	143	22	51	3	996	537	456	3	978	32,983	33·72
134	48	61	9	15	1	217	103	114	—	214	4,999	23·55
2	2	—	—	—	—	13	12	1	—	13	520	40·00
9	7	—	1	1	—	16	7	9	—	16	409	25·50
9	5	2	1	1	—	10	4	6	—	8	317	39·62
1	1	—	—	—	—	2	1	1	—	2	158	79·00
12	12	—	—	—	—	21	14	7	—	19	763	40·16
5	4	1	—	—	—	12	6	6	—	12	611	50·91
3	2	1	—	—	—	21	13	8	—	21	679	32·33
38	23	11	1	3	—	75	37	38	—	75	2,420	32·26
1	1	—	—	—	—	8	4	4	—	8	371	46·37
22	8	11	2	1	—	40	24	16	—	40	1,420	35·50
11	6	3	—	2	—	19	9	10	—	19	739	38·89
39	22	9	1	6	1	66	42	24	—	64	2,123	33·17
9	8	—	—	1	—	30	13	16	1	30	773	25·76
6	6	—	—	—	—	9	4	5	—	9	462	51·33
*	—	—	—	—	—	4	3	1	—	3	104	34·06
1	—	1	—	—	—	2	1	1	—	2	152	76·00
4	4	—	—	—	—	80	18	12	—	29	1,135	39·14
8	7	—	—	1	—	12	8	4	—	12	344	28·66
5	4	—	—	1	—	9	6	3	—	9	352	39·11
108	49	39	6	13	1	172	94	77	1	167	5,402	32·35
5	3	1	—	1	—	18	8	10	—	18	719	39·94
15	11	1	1	2	—	13	9	4	—	13	585	45·00
7	6	—	—	1	—	16	9	7	—	16	798	49·87
11	11	—	—	—	—	46	25	21	—	45	2,188	48·68
21	19	—	—	2	—	24	14	10	—	24	976	40·67
7	7	—	—	—	—	8	4	4	—	8	488	61·00
1	1	—	—	—	—	8	6	2	—	8	413	51·62
2	2	—	—	—	—	38	21	17	—	37	1,187	32·08
18	18	—	—	—	—	32	14	17	1	32	1,184	37·00
9	7	2	—	—	—	5	4	1	—	5	193	38·60

* No Marriages.

TABLE I.—*Births, Marriages, and Deaths,*

Counties and Towns.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX.			PARENTAGE.				
			M.	F.	U.	Am.	For.	Am.Fa. and For. M.	For.Fa. and Am. M.	Unk.
BRISTOL, .	102,886	2,682	1395	1284	3	1210	1230	100	126	16
Acushnet, .	1,132	22	10	12	—	21	—	1	—	—
Attleborough, .	6,769	282	134	147	1	162	93	10	15	2
Berkley, .	744	7	4	3	—	7	—	—	—	—
Dartmouth, .	3,367	68	30	38	—	59	5	2	1	1
Dighton, .	1,817	49	24	25	—	35	9	1	3	1
Easton, .	3,668	99	54	45	—	42	50	6	1	—
Fairhaven, .	2,626	42	26	16	—	36	3	1	1	1
Fall River, .	26,766	853	443	409	1	182	592	28	46	5
Freetown, .	1,372	16	8	8	—	16	—	—	—	—
Mansfield, .	2,432	64	33	31	—	43	13	3	5	—
New Bedford, .	21,320	459	235	224	—	253	155	18	27	6
Norton, .	1,821	34	21	13	—	20	10	8	1	—
Raynham, .	1,713	31	15	16	—	20	7	3	1	—
Rehoboth, .	1,895	23	16	7	—	18	1	2	2	—
Seekonk, .	1,021	8	6	2	—	6	—	1	1	—
Somerset, .	1,776	60	29	31	—	38	21	—	1	—
Swanzey, .	1,294	24	14	10	—	21	—	2	1	—
Taunton, .	18,629	491	268	223	—	183	270	18	20	—
Westport, .	2,724	50	25	24	1	48	1	1	—	—
DUKES, .	3,787	51	20	31	—	43	4	2	2	—
Chilmark, .	476	8	2	6	—	8	—	—	—	—
Edgartown, .	1,516	17	4	13	—	14	2	1	—	—
Gay Head,*	160	7	4	3	—	7	—	—	—	—
Gosnold, .	99	2	1	1	—	—	—	—	2	—
Tisbury, .	1,536	17	9	8	—	14	2	1	—	—
Essex, .	200,843	4,772	2433	2330	9	2333	1924	245	251	19
Amesbury, .	5,581	157	89	68	—	61	84	3	7	2
Andover, .	4,873	102	50	52	—	34	61	4	2	1
Beverly, .	6,507	168	85	83	—	115	32	11	10	—
Boxford, .	847	5	2	3	—	3	1	1	—	—
Bradford, .	2,014	45	24	21	—	29	14	1	1	—
Danvers, .	5,600	150	85	65	—	74	57	12	6	1
Essex, .	1,614	30	18	12	—	23	4	—	1	2
Georgetown, .	2,088	42	16	26	—	25	12	2	3	—
Gloucester, .	15,389	582	282	295	5	254	228	59	41	—
Groveland, .	1,776	44	18	26	—	28	14	—	2	—
Hamilton, .	790	15	8	7	—	14	1	—	—	—
Haverhill, .	13,092	293	156	136	1	177	84	13	17	2
Ipswich, .	3,720	62	27	34	1	39	16	4	1	2
Lawrence, .	28,921	735	364	371	—	146	521	25	43	—
Lynn, .	28,233	733	382	349	2	396	264	30	38	5
Lynnfield, .	818	18	11	7	—	12	5	—	1	—

* Incorporated, April 30, 1870.

registered during the year 1870—Continued.

MARRIAGES.						DEATHS.						
Couple.	NATIVITY.					Persons.	SEX.			No. whose ages are registered.	AGE.	
	Am.	For.	Am. M. and For Fe.	For. M. and Am Fe.	Unk.		M.	F.	Unk.		Agg'te.	Average.
917	606	198	44	67	2	1,862	929	929	4	1,846	63,385	34.34
10	8	—	—	2	—	24	16	8	—	22	1,207	54.86
58	34	13	4	7	—	145	62	83	—	145	4,945	34.10
6	6	—	—	—	—	11	9	2	—	11	390	35.45
26	25	1	—	—	—	63	41	22	—	63	2,759	43.79
22	20	1	—	1	—	24	7	16	1	23	882	38.35
21	19	—	—	2	—	41	22	19	—	41	1,428	34.83
19	19	—	—	—	—	53	29	24	—	51	2,292	44.94
224	93	96	18	17	—	558	287	271	—	553	15,151	27.40
10	9	—	—	1	—	12	8	4	—	12	528	44.00
15	11	2	—	2	—	29	16	13	—	29	995	34.31
251	166	60	8	17	—	379	167	212	—	375	13,150	35.07
11	10	1	—	—	—	20	11	9	—	20	1,264	63.20
17	14	—	2	1	—	26	11	15	—	26	1,110	42.69
11	9	—	1	1	—	18	12	6	—	18	958	53.22
3	3	—	—	—	—	14	6	8	—	14	692	49.43
12	12	—	—	—	—	27	14	13	—	27	1,193	44.19
10	9	—	—	1	—	18	5	13	—	18	1,056	58.67
176	125	24	11	14	2	368	182	183	3	367	11,816	32.20
15	14	—	—	1	—	82	24	8	—	31	1,569	50.61
32	26	2	4	—	—	70	33	37	—	70	3,300	47.14
3	2	—	1	—	—	6	2	4	—	6	383	63.83
17	15	1	1	—	—	22	9	13	—	22	1,108	50.36
1	1	—	—	—	—	2	—	2	—	2	41	20.50
1	1	—	—	—	—	3	3	—	—	3	96	32.00
10	7	1	2	—	—	37	19	18	—	37	1,672	45.19
2,086	1310	479	140	123	4	3,496	1759	1731	6	3,393	104,932	30.93
41	26	11	1	3	—	80	47	33	—	78	2,288	29.32
30	20	8	—	2	—	77	40	37	—	77	2,890	37.53
62	53	2	5	2	—	96	34	62	—	96	3,588	37.37
5	5	—	—	—	—	10	6	4	—	9	503	55.88
9	6	3	—	—	—	29	10	19	—	29	731	25.21
43	29	11	2	5	1	87	42	44	1	87	2,637	30.31
12	10	—	2	—	—	20	11	9	—	20	1,105	55.25
13	11	2	—	—	—	18	12	6	—	18	741	41.17
209	97	74	27	10	1	357	233	124	—	266	7,119	26.76
15	12	1	1	1	—	28	12	16	—	26	825	31.73
8	8	—	—	—	—	13	7	6	—	13	757	58.23
158	123	18	11	6	—	204	103	98	3	204	6,520	31.96
31	26	4	—	1	—	68	32	36	—	68	3,214	47.26
384	143	186	22	33	—	498	239	259	—	498	9,973	20.03
355	254	50	30	19	2	486	236	249	1	486	12,630	25.99
6	5	1	—	—	—	14	8	6	—	14	455	32.50

TABLE I.—*Births, Marriages, and Deaths,*

Counties and Towns.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX.			PARENTAGE.				
			M.	F.	U.	Am	For.	Am.Fa. and For. M.	For.Fa. and Am. M.	Unk.
ESSEX—Con.										
Manchester, .	1,665	48	24	24	—	29	7	11	1	—
Marblehead, .	7,703	201	100	101	—	143	41	7	9	1
Methuen, .	2,959	65	33	32	—	40	19	2	4	—
Middleton, .	1,010	13	6	7	—	10	3	—	—	—
Nahant, .	475	14	5	9	—	8	6	—	—	—
Newbury, .	1,430	31	18	13	—	27	2	—	1	1
Newburyport, .	12,595	323	176	147	—	155	137	15	16	—
North Andover, .	2,549	62	37	25	—	19	37	5	1	—
Peabody, .	7,343	222	115	107	—	74	125	8	15	—
Rockport, .	3,904	110	48	62	—	67	24	11	7	1
Rowley, .	1,157	21	6	15	—	19	2	—	—	—
Salem, .	24,117	227	110	117	—	134	64	16	12	1
Salisbury, .	3,776	90	51	39	—	59	27	1	3	—
Saugus, .	2,247	40	19	21	—	30	4	2	4	—
Swampscott, .	1,846	51	24	27	—	38	12	—	1	—
Topsfield, .	1,213	19	14	5	—	19	—	—	—	—
Wenham, .	985	17	8	9	—	14	2	—	1	—
West Newbury, .	2,006	37	22	15	—	18	14	2	3	—
FRANKLIN, .										
Ashfield, .	1,180	20	5	15	—	19	1	—	—	—
Bernardston, .	961	24	12	12	—	22	1	—	1	—
Buckland, .	1,946	58	28	30	—	13	41	—	4	—
Charlemont, .	1,005	15	8	7	—	14	—	—	1	—
Coleraine, .	1,742	34	19	15	—	25	5	1	3	—
Conway, .	1,460	34	17	17	—	26	4	2	2	—
Deerfield, .	3,632	108	56	52	—	37	64	1	4	2
Erving, .	579	12	4	8	—	11	1	—	—	—
Gill, .	653	6	4	2	—	5	—	—	—	1
Greenfield, .	3,589	74	33	41	—	48	18	5	3	—
Hawley, .	672	18	11	7	—	15	1	—	2	—
Heath, .	613	9	5	4	—	6	1	—	1	1
Leverett, .	877	10	8	2	—	9	1	—	—	—
Leyden, .	518	9	4	5	—	5	3	—	1	—
Monroe, .	201	2	1	1	—	2	—	—	—	—
Montague, .	2,224	42	20	22	—	26	15	—	—	1
New Salem, .	987	13	7	6	—	13	—	—	—	—
Northfield, .	1,720	23	11	11	1	13	9	—	—	1
Orange, .	2,091	43	18	25	—	41	1	1	—	—
Rowe, .	581	12	6	6	—	12	—	—	—	—
Shelburne, .	1,582	24	10	14	—	19	4	1	—	—
Shutesbury, .	614	7	3	4	—	5	1	1	—	—
Sunderland, .	832	9	6	3	—	6	3	—	—	—
Warwick, .	769	15	8	7	—	11	4	—	—	—
Wendell, .	539	6	3	3	—	5	1	—	—	—
Whately, .	1,068	17	12	5	—	13	4	—	—	—

registered during the year 1870—Continued.

MARRIAGES.						DEATHS.						
Couples.	NATIVITY.					Persons.	SEX.			No whose ages are registered.	AGE.	
	Am.	For.	Am. M. and For.Fe.	For. M. and Am.Fe.	Unk.		M.	F.	Unk.		Agg'te.	Average.
17	12	4	1	—	—	16	11	5	—	16	514	32·12
94	70	9	10	5	—	147	84	63	—	146	4,216	28·88
29	24	4	—	1	—	34	16	18	—	34	1,341	39·44
12	8	2	1	1	—	17	8	9	—	17	471	27·71
3	3	—	—	—	—	6	3	3	—	6	147	24·50
9	9	—	—	—	—	26	14	12	—	26	984	37·85
127	114	4	2	7	—	230	109	121	—	229	7,754	33·86
18	13	2	2	1	—	48	25	23	—	48	2,105	43·85
44	36	4	2	2	—	101	49	52	—	101	2,884	28·85
54	32	14	6	2	—	76	33	43	—	75	2,807	37·43
6	6	—	—	—	—	24	13	11	—	23	1,261	54·83
203	115	57	12	19	—	497	239	257	1	494	16,754	33·91
37	31	3	2	1	—	68	33	35	—	68	2,539	37·84
13	10	2	—	1	—	81	12	19	—	81	972	31·35
13	12	1	—	—	—	32	12	20	—	32	1,562	48·81
2	2	—	—	—	—	14	5	9	—	14	715	51·07
4	3	—	—	1	—	21	9	12	—	21	957	45·57
15	12	2	1	—	—	23	12	11	—	23	973	42·30
231	172	35	4	20	—	554	260	293	1	548	21,739	39·67
14	13	—	—	1	—	13	6	7	—	13	658	50·61
11	10	—	1	—	—	10	4	6	—	10	486	48·60
18	11	4	—	3	—	32	18	14	—	32	964	30·12
8	8	—	—	—	—	17	9	8	—	17	517	30·41
18	11	—	1	1	—	26	11	15	—	26	1,128	43·38
14	8	3	1	2	—	27	10	17	—	27	1,308	48·44
14	6	4	—	4	—	54	23	31	—	54	1,920	35·55
4	3	1	—	—	—	10	4	6	—	10	202	20·20
3	3	—	—	—	—	10	5	5	—	10	665	66·50
41	22	15	1	3	—	75	40	35	—	74	1,921	25·96
3	3	—	—	—	—	12	6	6	—	12	441	36·75
4	4	—	—	—	—	3	—	2	1	3	140	46·66
3	3	—	—	—	—	9	5	4	—	9	566	62·69
3	3	—	—	—	—	6	5	1	—	6	134	22·33
2	2	—	—	—	—	4	1	3	—	4	160	40·00
15	9	5	—	1	—	59	27	32	—	57	2,103	38·89
4	4	—	—	—	—	8	4	4	—	8	388	48·50
8	6	1	—	1	—	22	11	11	—	22	1,214	55·18
4	4	—	—	—	—	39	18	21	—	39	1,574	40·36
4	4	—	—	—	—	8	1	7	—	8	473	59·12
12	9	1	—	2	—	28	10	18	—	28	1,196	42·71
3	2	—	—	1	—	10	8	2	—	9	513	57·00
7	7	—	—	—	—	17	5	12	—	16	706	44·12
7	7	—	—	—	—	14	6	8	—	14	778	55·57
7	5	1	—	1	—	13	6	7	—	12	411	34·25
5	5	—	—	—	—	28	17	11	—	28	1,173	41·89

TABLE I.—*Births, Marriages, and Deaths,*

Counties and Towns.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX.			PARENTAGE.				
			M.	F.	U.	Am.	For.	Am. Fa. and For. M.	For. Fa. and Am. M.	Unk.
HAMPDEN, .	78,409	1,969	1080	939	—	834	962	86	75	12
Agawam, .	2,001	56	27	29	—	16	33	5	2	—
Blandford, .	1,026	21	8	13	—	19	2	—	—	—
Brimfield, .	1,288	27	9	18	—	16	5	4	2	—
Chester, .	1,253	17	12	5	—	15	1	1	—	—
Chicopee, .	9,607	198	96	102	—	64	118	9	5	2
Granville, .	1,293	14	5	9	—	11	3	—	—	—
Holland, .	344	9	6	3	—	9	—	—	—	—
Holyoke, .	10,733	329	175	154	—	92	210	13	14	—
Longmeadow, .	1,342	28	15	13	—	13	15	—	—	—
Ludlow, .	1,136	20	9	11	—	11	8	1	—	—
Monson, .	3,204	58	39	19	—	38	18	—	—	2
(St. Almshouse,) .	—	14	7	7	—	4	7	1	—	2
Montgomery, .	318	8	6	2	—	6	—	—	—	2
Palmer, .	3,631	93	45	48	—	32	59	2	—	—
Russell, .	635	24	14	10	—	13	8	3	—	—
Southwick, .	1,100	27	14	13	—	24	2	1	—	—
Springfield, .	26,703	756	408	348	—	300	376	37	39	4
Tolland, .	509	13	6	7	—	10	2	1	—	—
Wales, .	831	13	5	8	—	10	3	—	—	—
Westfield, .	6,519	151	79	72	—	87	50	3	11	—
W. Springfield, .	2,606	55	21	34	—	18	31	5	1	—
Wilbraham, .	2,330	38	24	14	—	26	11	—	1	—
HAMPSHIRE, .	44,388	1,019	541	478	—	508	438	33	40	—
Amherst, .	4,035	85	50	35	—	57	20	3	5	—
Belchertown, .	2,428	47	22	25	—	41	5	1	—	—
Chesterfield, .	811	21	11	10	—	18	—	—	3	—
Cummington, .	1,037	14	8	6	—	11	1	—	2	—
Easthampton, .	3,620	88	48	40	—	32	48	4	4	—
Enfield, .	1,023	21	8	13	—	14	7	—	—	—
Goshen, .	368	6	3	3	—	6	—	—	—	—
Granby, .	863	20	7	13	—	14	6	—	—	—
Greenwich, .	665	8	3	5	—	8	—	—	—	—
Hadley, .	2,301	53	20	33	—	21	32	—	—	—
Hatfield, .	1,594	64	30	34	—	19	40	2	3	—
Huntington, .	1,156	18	11	7	—	11	6	—	1	—
Middlefield, .	728	13	8	5	—	7	5	—	1	—
Northampton, .	10,160	268	158	110	—	106	141	8	18	—
Pelham, .	673	9	4	5	—	9	—	—	—	—
Plainfield, .	521	12	6	6	—	12	—	—	—	—
Prescott, .	541	6	3	3	—	6	—	—	—	—
South Hadley, .	2,840	84	50	34	—	30	44	7	3	—
Southampton, .	1,159	22	13	9	—	16	5	—	1	—
Ware, .	4,259	94	47	47	—	34	53	6	1	—
Westhampton, .	587	18	3	15	—	10	7	—	1	—

registered during the year 1870—Continued.

MARRIAGES.						DEATHS.						
Couples.	NATIVITY.					Persons.	SEX.			No. whose ages are registered.	AGE.	
	Am.	For.	Am. M. and For. Fe.	For. M. and Am. Fe.	Unk.		M.	F.	Unk.		Agg'te.	Average.
847	474	271	49	53	—	1,499	757	742	—	1493	42,806	28·67
10	8	1	1	—	—	23	12	11	—	23	914	39·74
7	7	—	—	—	—	16	7	9	—	16	783	48·94
7	7	—	—	—	—	28	13	15	—	28	1,367	48·82
8	7	1	—	—	—	10	4	6	—	10	321	32·10
119	62	38	8	11	—	177	91	86	—	177	5,519	31·18
10	8	2	—	—	—	16	8	8	—	15	950	63·33
2	2	—	—	—	—	7	4	3	—	7	353	50·43
156	49	88	10	9	—	292	139	153	—	292	5,055	17·31
14	14	—	—	—	—	27	12	15	—	27	1,079	39·96
19	15	—	4	—	—	12	6	6	—	12	633	52·75
26	18	2	4	2	—	49	29	20	—	48	1,674	34·87
—	—	—	—	—	—	36	20	16	—	36	505	14·03
1	1	—	—	—	—	9	6	3	—	9	351	39·00
56	27	23	4	2	—	77	42	35	—	76	2,298	30·17
4	3	1	—	—	—	14	5	9	—	13	420	32·31
8	8	—	—	—	—	10	5	5	—	10	397	39·70
295	158	102	15	20	—	494	252	242	—	493	12,789	25·94
5	5	—	—	—	—	4	2	2	—	4	176	44·00
7	6	—	—	1	—	6	3	3	—	6	316	52·66
57	40	8	2	7	—	135	64	71	—	134	4,580	34·18
15	9	5	1	—	—	36	22	14	—	36	1,290	35·83
21	20	—	—	1	—	21	11	10	—	21	1,041	49·57
434	260	124	19	29	2	760	366	393	1	757	26,807	35·41
30	28	1	—	1	—	76	34	42	—	76	2,578	33·92
18	18	—	—	—	—	24	10	14	—	24	881	36·71
7	7	—	—	—	—	14	7	7	—	14	630	45·00
6	5	1	—	—	—	27	13	14	—	27	1,190	44·07
26	16	6	2	1	1	59	24	35	—	58	1,473	25·39
13	9	2	1	1	—	19	7	12	—	19	835	43·95
6	6	—	—	—	—	7	5	2	—	6	287	47·83
4	4	—	—	—	—	15	6	9	—	15	673	44·87
3	3	—	—	—	—	13	8	5	—	13	445	34·23
13	12	—	1	—	—	44	17	27	—	44	1,838	41·77
6	5	1	—	—	—	39	20	19	—	39	1,310	33·59
10	8	1	—	1	—	29	15	14	—	28	1,137	40·60
1	1	—	—	—	—	13	8	4	1	13	239	18·38
159	51	81	11	16	—	162	90	72	—	162	5,346	33·00
8	8	—	—	—	—	12	4	8	—	12	516	43·00
1	1	—	—	—	—	8	4	4	—	8	478	59·75
4	4	—	—	—	—	5	—	5	—	5	257	51·40
25	20	3	1	1	—	53	20	33	—	53	1,591	30·02
7	7	—	—	—	—	22	11	11	—	22	1,112	50·55
62	27	25	2	7	1	65	36	29	—	65	2,323	35·74
2	2	—	—	—	—	11	3	8	—	11	506	46·00

TABLE I.—*Births, Marriages, and Deaths,*

Counties and Towns.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX.			PARENTAGE.				
			M.	F.	U.	Am.	For.	Am. Fa. and For. M.	For. Fa. and Am. M.	Unk.
HAMPS.—Con.										
Williamsburg, .	2,159	36	20	16	—	16	17	2	1	—
Worthington, .	860	12	8	4	—	10	1	—	1	—
MIDDLESEX, .	274,353	7,444	3884	3560	—	2737	3838	355	473	41
Acton, .	1,593	23	13	10	—	17	6	—	—	—
Arlington, .	3,261	88	47	41	—	33	51	1	3	—
Ashby, .	994	15	9	6	—	11	2	1	—	1
Ashland,* .	2,186	60	33	27	—	33	23	1	2	1
Bedford, .	849	15	11	4	—	7	4	1	2	1
Belmont, .	1,513	35	22	13	—	11	22	1	1	—
Billerica, .	1,833	31	11	20	—	16	11	1	2	1
Boxborough, .	338	4	2	2	—	4	—	—	—	—
Brighton, .	4,967	165	87	78	—	60	90	8	6	1
Burlington, .	626	9	6	3	—	5	4	—	—	—
Cambridge, .	39,634	1,307	698	609	—	412	714	78	99	4
Carlisle, .	569	7	6	1	—	6	—	—	1	—
Charlestown, .	28,323	766	391	375	—	314	336	52	63	1
Chelmsford, .	2,374	60	34	26	—	29	21	5	5	—
Concord, .	2,412	53	28	25	—	13	27	2	5	1
Dracut, .	2,078	33	19	14	—	9	19	2	3	—
Dunstable, .	471	10	6	4	—	10	—	—	—	—
Everett, .	2,220	25	12	13	—	22	3	—	—	—
Framingham, .	4,968	98	45	53	—	38	48	7	5	—
Groton, .	3,584	103	47	56	—	45	46	4	8	—
Holliston, .	3,073	75	39	36	—	38	33	3	1	—
Hopkinton, .	4,419	90	48	42	—	14	66	4	6	—
Hudson, .	3,389	99	50	49	—	33	53	4	9	—
Lexington, .	2,277	42	24	18	—	15	22	1	4	—
Lincoln, .	791	12	8	4	—	6	6	—	—	—
Littleton, .	983	9	8	1	—	7	1	—	1	—
Lowell, .	40,928	924	497	427	—	233	578	45	66	2
Malden, .	7,367	178	90	88	—	77	80	10	11	—
Marlborough,† .	8,474	411	217	194	—	91	282	11	27	—
Medford, .	5,717	116	69	47	—	61	41	10	3	1
Melrose, .	3,414	58	30	28	—	39	9	8	2	—
Natick, .	6,404	241	114	127	—	95	115	7	24	—
Newton, .	12,825	293	155	138	—	109	152	13	17	2
North Reading, .	942	17	8	9	—	14	3	—	—	—
Pepperell, .	1,842	33	16	17	—	21	10	—	1	1
Reading, .	2,664	56	27	29	—	37	13	2	1	3
Sherborn, .	1,062	17	11	6	—	11	6	—	—	—
Shirley, .	1,451	24	11	13	—	10	10	2	1	1
Somerville, .	14,685	528	259	269	—	195	273	24	29	7
Stoneham, .	4,513	120	65	55	—	67	44	4	4	1
Stow, .	1,813	49	31	18	—	22	20	3	3	1
Sudbury, .	2,091	50	24	26	—	21	27	1	1	—

* Ayer incorporated, Feb. 14, 1871.

† Maynard incorporated, April 19, 1871.

registered during the year 1870—Continued.

MARRIAGES.						DEATHS.						
Couples.	NATIVITY.					Persons.	SEX.			No whose ages are registered.	AGE.	
	Am.	For.	Am. M. and For. Fe.	For. M. and Am. Fe.	Unk.		M.	F.	U.		Agg'te.	Average.
16	11	3	1	1	—	24	11	13	—	24	484	20·17
7	7	—	—	—	—	19	13	6	—	19	678	35·68
2,714	1467	798	190	258	1	5,169	2499	2667	3	5,145	148,967	28·95
17	14	—	1	2	—	18	11	7	—	18	737	40·94
21	11	5	1	4	—	55	30	25	—	55	1,450	26·36
6	5	1	—	—	—	22	7	15	—	22	1,008	45·82
20	15	3	1	1	—	36	18	18	—	36	969	26·92
8	6	1	—	1	—	13	8	5	—	13	482	37·08
9	7	1	1	—	—	24	10	14	—	24	490	20·42
15	9	2	2	2	—	30	15	15	—	30	1,192	39·73
6	5	—	—	1	—	4	2	2	—	4	236	59·00
55	33	18	2	2	—	88	45	43	—	87	2,522	28·99
8	7	—	1	—	—	7	4	3	—	7	423	60·43
399	183	144	25	47	—	811	418	393	—	808	19,689	24·37
2	2	—	—	—	—	5	4	1	—	5	212	42·40
342	177	95	35	35	—	594	308	285	1	588	15,089	25·66
21	14	1	4	2	—	50	18	32	—	50	1,609	32·18
23	10	12	—	1	—	38	17	21	—	38	1,290	33·95
9	5	3	—	1	—	31	14	17	—	31	917	29·58
3	3	—	—	—	—	5	2	3	—	5	417	83·40
7	7	—	—	—	—	29	12	16	1	29	757	26·07
52	33	14	1	4	—	84	42	42	—	83	3,827	46·11
43	21	14	3	5	—	69	33	36	—	68	1,948	28·65
30	28	—	—	2	—	49	30	19	—	48	1,715	35·73
25	13	7	2	3	—	46	21	25	—	46	1,659	36·07
28	21	2	4	1	—	63	24	39	—	63	1,519	24·11
16	9	7	—	—	—	38	11	27	—	38	1,865	49·08
5	2	2	—	1	—	12	7	5	—	12	539	44·92
12	11	—	—	1	—	10	1	9	—	10	407	40·70
524	243	190	42	49	—	952	441	511	—	948	22,720	23·97
55	31	18	2	4	—	117	60	57	—	116	3,010	25·95
80	24	42	5	9	—	168	78	90	—	168	3,163	18·83
54	40	9	2	3	—	86	38	48	—	86	2,856	33·21
85	22	4	5	4	—	47	17	30	—	47	1,863	39·64
60	33	18	6	3	—	106	53	53	—	106	2,937	27·71
109	57	31	8	12	1	130	62	68	—	130	5,031	38·70
8	7	—	—	1	—	17	7	10	—	16	802	50·12
17	15	—	—	2	—	28	10	18	—	28	1,115	39·82
17	16	—	—	1	—	36	21	15	—	36	1,645	45·69
15	14	—	—	1	—	17	5	12	—	16	959	59·94
6	5	1	—	—	—	33	14	19	—	33	760	23·03
81	41	22	8	10	—	258	132	126	—	258	6,312	24·47
54	32	13	2	7	—	63	28	35	—	63	2,013	31·95
17	8	6	1	2	—	29	15	14	—	29	1,016	35·03
12	10	—	2	—	—	26	12	14	—	26	1,075	41·35

TABLE I.—*Births, Marriages, and Deaths,*

Counties and Towns.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX.			PARENTAGE.				
			M.	F.	U.	Am.	For.	Am. Pa. and For. M.	For. Pa. and Am. M.	Unk.
MIDDLEX— <i>Con.</i>										
Tewksbury, .	1,944	23	9	14	—	14	8	—	1	—
(<i>St. Almshouse</i>),	—	59	31	28	—	12	37	1	1	8
Townsend, .	1,962	52	27	25	—	36	9	1	6	—
Tyngsborough, .	629	6	3	3	—	6	—	—	—	—
Wakefield, .	4,135	118	58	60	—	53	56	7	2	—
Waltham, .	9,065	299	151	148	—	105	166	12	16	—
Watertown, .	4,326	104	56	48	—	32	61	3	7	1
Wayland, .	1,240	22	14	8	—	15	5	—	2	—
Westford, .	1,803	43	19	24	—	20	18	3	1	1
Weston, .	1,261	20	10	10	—	10	8	1	—	1
Wilmington, .	866	11	6	5	—	6	5	—	—	—
Winchester, .	2,645	74	40	34	—	30	38	3	3	—
Woburn, .	8,560	264	132	132	—	82	156	8	18	—
NANTUCKET, .	4,123	48	25	23	—	38	1	3	5	1
NORFOLK, .	89,443	2,256	1145	1109	2	945	1030	123	150	8
Bellingham, .	1,282	29	17	12	—	16	9	4	—	—
Braintree, .	3,948	88	46	42	—	45	34	6	3	—
Brookline, .	6,650	200	104	96	—	39	145	7	6	3
Canton, .	3,879	77	40	37	—	20	44	4	9	—
Cohasset, .	2,130	53	29	24	—	30	19	1	3	—
Dedham, .	7,342	203	121	82	—	71	101	11	19	1
Dover, .	645	12	9	3	—	5	7	—	—	—
Foxborough, .	3,057	38	18	20	—	29	6	1	2	—
Franklin, .	2,512	42	21	21	—	25	14	—	3	—
Hyde Park, .	4,136	167	84	83	—	55	84	14	12	2
Medfield, .	1,142	19	7	12	—	11	6	1	1	—
Medway, .	3,721	93	46	47	—	50	32	6	5	—
Milton, .	2,683	53	29	24	—	24	24	5	—	—
Needham, .	3,607	104	45	59	—	31	62	4	7	—
Norfolk,* .	1,081	31	10	21	—	16	13	1	1	—
Quincy, .	7,442	200	102	97	1	90	76	15	18	1
Randolph, .	5,642	153	75	77	1	65	60	10	18	—
Sharon, .	1,508	24	14	10	—	13	8	2	1	—
Stoughton, .	4,914	102	51	51	—	48	42	7	5	—
Walpole, .	2,137	34	16	18	—	19	10	1	3	1
West Roxbury, .	8,683	228	111	117	—	78	118	15	17	—
Weymouth, .	9,010	278	138	140	—	146	109	8	15	—
Wrentham, .	2,292	28	12	16	—	19	7	—	2	—
PLYMOUTH, .	65,365	1,463	788	675	—	990	366	46	42	19
Abington, .	9,308	231	134	97	—	118	100	4	8	1
Bridgewater, .	3,660	58	33	25	—	30	21	4	2	1
(<i>St. Almshouse</i>),	—	25	12	13	—	4	13	—	—	8

* Incorporated, Feb. 23, 1870.

registered during the year 1870—Continued.

MARRIAGES.						DEATHS.						
Couples.	NATIVITY.					Persons.	SEX.			No. whose ages are registered.	AGE.	
	Am.	For.	Am M. and For. Fe	For. M. and Am Fe.	Unk.		M.	F.	Unk.		Agg'te.	Average.
10	8	—	—	2	—	10	4	6	—	10	441	44·10
—	—	—	—	—	—	246	132	114	—	246	9,308	37·84
19	18	—	—	1	—	30	14	16	—	30	1,114	37·13
5	3	—	2	—	—	10	5	5	—	10	475	47·50
50	29	13	4	4	—	67	34	33	—	67	2,378	35·49
125	61	45	9	10	—	135	60	75	—	135	3,576	26·49
48	17	20	5	6	—	67	31	35	1	67	1,984	29·61
17	15	1	—	1	—	23	11	12	—	23	840	36·52
11	9	1	—	1	—	31	15	16	—	30	1,549	51·63
5	5	—	—	—	—	10	5	5	—	10	551	55·10
5	4	—	—	1	—	24	11	13	—	24	1,167	48·62
24	15	8	—	1	—	26	12	14	—	26	758	29·15
69	34	24	4	7	—	146	60	86	—	144	4,581	31·81
32	27	—	—	5	—	93	49	44	—	92	4,595	49·95
698	451	151	40	55	1	1,399	684	712	3	1,388	47,128	33·95
4	3	—	1	—	—	18	8	10	—	16	699	43·69
32	24	3	1	4	—	68	33	35	—	68	2,746	40·38
67	23	28	8	7	1	97	45	52	—	94	2,758	29·34
28	10	11	3	4	—	82	34	47	1	80	2,182	27·27
13	11	1	1	—	—	27	12	15	—	27	1,127	41·74
50	31	10	4	5	—	106	51	55	—	106	3,114	29·38
4	3	1	—	—	—	12	4	8	—	12	836	69·67
25	21	1	1	2	—	40	18	22	—	40	1,672	41·80
15	10	2	1	2	—	35	16	18	1	35	1,095	31·29
42	24	12	1	5	—	72	39	33	—	72	1,690	23·47
10	9	—	—	1	—	22	9	13	—	22	1,025	46·59
24	20	2	—	2	—	52	26	26	—	52	2,064	39·69
19	12	3	3	1	—	34	13	21	—	33	1,559	47·24
33	23	7	1	2	—	60	39	21	—	60	1,710	28·50
11	8	1	2	—	—	8	7	1	—	8	426	53·25
66	42	15	3	6	—	133	70	63	—	133	4,141	31·14
44	33	6	1	4	—	121	59	61	1	120	4,191	34·92
6	6	—	—	—	—	31	15	16	—	31	1,443	46·55
45	35	8	—	2	—	80	43	37	—	80	2,426	30·32
19	15	1	1	2	—	27	15	12	—	27	1,495	55·36
54	23	25	3	3	—	101	50	51	—	101	2,963	29·34
70	51	11	5	3	—	140	66	74	—	138	4,092	29·65
17	14	3	—	—	—	33	12	21	—	33	1,674	50·73
535	453	58	11	13	—	1,062	535	523	4	1,059	43,355	40·94
67	46	15	3	3	—	111	50	58	3	109	3,278	30·07
32	21	10	—	1	—	38	22	16	—	38	1,697	44·66
—	—	—	—	—	—	75	45	30	—	75	2,563	34·17

TABLE I.—*Births, Marriages, and Deaths,*

Counties and Towns.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX.			PARENTAGE.				
			M.	F.	U.	Am.	For.	Am Fa. and For. M.	For Fa. and Am. M.	Unk.
PLYM'TH—Con.										
Carver, . . .	1,092	28	12	16	—	26	—	2	—	—
Duxbury, . . .	2,341	40	26	14	—	34	3	2	1	—
E. Bridgewater, . . .	3,017	49	28	21	—	34	12	1	2	—
Halifax, . . .	619	12	7	5	—	12	—	—	—	—
Hanover, . . .	1,628	32	11	21	—	23	6	1	—	2
Hanson, . . .	1,219	24	12	12	—	19	3	1	1	—
Hingham, . . .	4,422	94	51	43	—	55	29	7	2	1
Hull, . . .	261	3	3	—	—	3	—	—	—	—
Kingston, . . .	1,604	29	16	13	—	18	8	1	2	—
Lakeville, . . .	1,159	26	11	15	—	23	1	1	1	—
Marion, . . .	896	22	6	16	—	21	—	1	—	—
Marshfield, . . .	1,659	35	19	16	—	33	1	1	—	—
Mattapoisett, . . .	1,361	20	13	7	—	20	—	—	—	—
Middleborough, . . .	4,687	82	41	41	—	69	10	3	—	—
N. Bridgewater, . . .	8,007	243	131	112	—	135	86	6	15	1
Pembroke, . . .	1,447	18	6	12	—	15	—	1	1	1
Plymouth, . . .	6,238	143	75	68	—	111	21	5	4	2
Plympton, . . .	804	9	5	4	—	9	—	—	—	—
Rochester, . . .	1,024	13	6	7	—	13	—	—	—	—
Scituate, . . .	2,350	60	35	25	—	44	11	4	1	—
South Scituate, . . .	1,661	31	16	15	—	29	1	—	—	1
Wareham, . . .	3,098	103	60	43	—	70	29	1	2	1
W. Bridgewater, . . .	1,803	33	19	14	—	22	11	—	—	—
SUFFOLK, . . .	270,802	8,614	4442	4172	—	2324	4925	518	700	147
Boston, . . .	250,526	8,073	4146	3927	—	2050	4740	486	654	143
Chelsea, . . .	18,547	508	278	230	—	256	176	30	45	1
Revere,* . . .	1,197	20	12	8	—	10	8	—	1	1
Winthrop, . . .	532	13	6	7	—	8	1	2	—	2
WORCESTER, . . .	192,716	5,012	2592	2414	6	1961	2619	174	231	27
Ashburnham, . . .	2,172	55	32	23	—	35	14	2	3	1
Athol, . . .	3,517	64	35	29	—	48	10	2	3	1
Auburn, . . .	1,178	26	9	17	—	14	10	—	1	1
Barre, . . .	2,572	33	15	18	—	26	3	1	3	—
Berlin, . . .	1,016	25	12	13	—	20	5	—	—	—
Blackstone, . . .	5,421	118	62	55	1	33	65	14	6	—
Bolton, . . .	1,014	16	9	7	—	15	1	—	—	—
Boylston, . . .	800	16	8	8	—	13	2	1	—	—
Brookfield, . . .	2,527	43	24	19	—	20	20	1	2	—
Charlton, . . .	1,878	36	20	16	—	28	7	—	1	—
Clinton, . . .	5,429	155	69	86	—	31	104	10	10	—
Dana, . . .	758	14	7	7	—	14	—	—	—	—
Douglas, . . .	2,182	78	43	35	—	25	45	3	5	—

* Name changed from North Chelsea, 1871.

registered during the year 1870—Continued.

MARRIAGES.						DEATHS.						
Couples.	NATIVITY.					Persons.	SEX.			No. whose ages are registered.	AGE.	
	Am.	For.	Am. M. and For. Fe.	For. M. and Am. Fe.	Unk.		M.	F.	Unk.		Agg'te.	Average.
8	8	-	-	-	-	35	16	19	-	35	1,793	50.66
11	10	1	-	-	-	29	15	14	-	29	1,792	61.79
24	23	1	-	-	-	54	24	30	-	54	2,411	44.65
2	2	-	-	-	-	10	6	4	-	10	441	44.10
7	7	-	-	-	-	15	6	9	-	15	612	40.80
11	11	-	-	-	-	11	9	2	-	11	509	46.27
37	32	3	1	1	-	75	33	42	-	75	3,396	45.28
2	-	-	1	1	-	2	1	1	-	2	63	31.50
15	14	-	1	-	-	33	12	21	-	33	1,491	45.18
8	8	-	-	-	-	17	8	9	-	17	804	47.29
5	5	-	-	-	-	21	15	6	-	21	1,099	52.33
21	21	-	-	-	-	24	18	6	-	24	1,463	60.96
15	15	-	-	-	-	30	18	12	-	30	1,474	49.13
29	28	-	-	1	-	79	39	40	-	79	3,236	40.96
36	59	21	1	5	-	128	55	72	1	128	3,587	28.02
9	9	-	-	-	-	19	14	5	-	19	954	50.21
60	55	2	2	1	-	106	55	51	-	106	4,549	42.92
8	8	-	-	-	-	14	3	11	-	14	814	58.14
12	12	-	-	-	-	20	10	10	-	19	1,010	53.16
19	17	1	1	-	-	27	14	13	-	27	902	38.41
12	12	-	-	-	-	31	14	17	-	31	1,386	44.71
24	19	4	1	-	-	37	23	14	-	37	1,150	31.08
11	11	-	-	-	-	21	10	11	-	21	881	41.95
3,535	1433	1462	285	355	-	6,428	3267	3160	1	6,425	157,580	24.53
3,340	1328	1409	269	334	-	6,098	3102	2996	-	6,097	149,666	24.55
194	104	53	16	21	-	312	162	150	-	312	7,329	23.52
1	1	-	-	-	-	12	2	10	-	10	377	37.70
*	-	-	-	-	-	6	1	4	1	6	198	33.00
1,854	1099	532	80	141	2	3,465	1780	1679	6	3,454	103,229	29.89
16	15	-	-	1	-	40	25	15	-	40	1,088	27.20
38	34	2	-	1	1	80	40	40	-	80	2,199	27.49
5	1	2	-	2	-	14	9	5	-	14	670	47.86
14	11	2	-	1	-	36	17	19	-	36	1,576	43.78
15	13	-	-	2	-	16	7	9	-	16	935	58.44
68	20	40	2	5	1	80	36	44	-	79	2,721	34.44
10	10	-	-	-	-	17	5	12	-	17	647	38.06
6	6	-	-	-	-	21	13	8	-	21	700	33.33
25	22	3	-	-	-	36	16	20	-	36	1,407	39.08
15	15	-	-	-	-	30	15	15	-	30	1,397	46.57
46	17	21	4	4	-	112	47	65	-	111	2,666	24.02
7	7	-	-	-	-	19	9	10	-	19	859	45.21
21	11	9	-	1	-	46	27	19	-	46	1,169	25.41

TABLE I.—*Births, Marriages, and Deaths,*

Counties and Towns.	Population. United States Census, 1870.	BIRTHS.								
		Whole No.	SEX.			PARENTAGE.				
			M.	F.	U.	Am.	For.	Am.Fa. and For. M.	For.Fa. and Am. M.	Unk.
WORCES'R- <i>Con.</i>										
Dudley, . . .	2,388	69	33	36	-	21	41	1	6	-
Fitchburg, . . .	11,260	303	150	153	-	130	148	11	14	-
Gardner, . . .	3,333	88	45	43	-	42	38	2	6	-
Grafton, . . .	4,594	85	51	34	-	30	46	5	4	-
Hardwick, . . .	2,219	46	25	21	-	17	26	1	2	-
Harvard, . . .	1,341	20	4	16	-	11	9	-	-	-
Holden, . . .	2,062	45	20	25	-	24	18	1	2	-
Hubbardston, . .	1,654	30	19	11	-	24	4	-	-	2
Lancaster, . . .	1,845	16	11	5	-	10	6	-	-	-
Leicester, . . .	2,768	65	33	32	-	20	37	2	6	-
Leominster, . . .	3,894	101	52	48	1	69	23	2	6	1
Lunenburg, . . .	1,121	24	13	11	-	21	2	1	-	-
Mendon, . . .	1,175	40	13	27	-	28	9	1	1	1
Milford, . . .	9,890	336	190	146	-	91	224	6	15	-
Millbury, . . .	4,397	170	87	83	-	87	111	12	9	1
New Braintree, . .	640	9	5	4	-	7	2	-	-	-
Northborough, . .	1,504	34	16	18	-	21	9	2	2	-
Northbridge, . . .	3,774	112	64	48	-	45	57	4	6	-
N. Brookfield, . .	3,343	113	62	51	-	39	63	2	8	1
Oakham, . . .	860	12	5	7	-	8	2	1	-	1
Oxford, . . .	2,669	54	32	22	-	24	25	3	-	2
Paxton, . . .	646	6	3	3	-	5	-	-	1	-
Petersham, . . .	1,335	22	10	12	-	19	1	-	2	-
Phillipston, . . .	693	9	5	4	-	8	-	1	-	-
Princeton, . . .	1,279	25	11	14	-	23	1	1	-	-
Royalston, . . .	1,354	16	9	7	-	13	2	1	-	-
Rutland, . . .	1,024	22	14	8	-	15	6	1	-	-
Shrewsbury, . . .	1,610	35	20	15	-	24	8	3	-	-
Southborough, . .	2,135	45	18	27	-	19	22	1	3	-
Southbridge, . . .	5,208	164	73	91	-	13	149	1	-	1
Spencer, . . .	3,952	166	79	87	-	29	134	-	-	3
Sterling, . . .	1,670	27	16	11	-	21	4	-	2	-
Sturbridge, . . .	2,101	33	16	17	-	19	13	1	-	-
Sutton, . . .	2,699	61	31	30	-	33	21	2	4	1
Templeton, . . .	2,802	75	35	40	-	36	37	-	2	-
Upton, . . .	1,989	42	20	22	-	25	15	-	1	1
Uxbridge, . . .	3,058	81	52	29	-	30	42	5	4	-
Warren, . . .	2,625	66	42	24	-	26	32	4	4	-
Webster, . . .	4,763	89	56	33	-	18	66	2	3	-
Westborough, . . .	3,601	101	49	52	-	44	51	1	5	-
West Boylston, . .	2,862	82	34	48	-	29	44	5	4	-
West Brookfield, .	1,842	47	27	20	-	19	24	1	3	-
Westminster, . . .	1,770	29	14	15	-	23	4	2	-	-
Winchendon, . . .	3,398	86	45	39	2	47	30	-	2	7
Worcester, . . .	41,105	1,232	638	592	2	382	727	51	70	2

registered during the year 1870—Concluded.

MARRIAGES.						DEATHS.						
Couples.	NATIVITY					Persons.	SEX.			No. whose ages are registered.	AGE.	
	Am.	For.	Am. M. and For. Fe.	For. M. and Am. Fe.	Unk.		M.	F.	Unk.		Agg'te.	Average.
6	5	1	-	-	-	27	10	17	-	27	1,018	37.70
132	91	30	5	6	-	208	109	99	-	208	4,773	22.95
30	19	5	3	3	-	55	26	29	-	55	1,729	31.44
40	23	14	2	1	-	62	27	34	1	62	2,075	33.47
20	10	9	-	1	-	12	5	7	-	12	429	35.75
7	7	-	-	-	-	28	17	11	-	28	1,095	39.11
15	10	2	3	-	-	39	20	19	-	39	1,600	41.03
10	9	-	1	-	-	25	12	13	-	25	956	38.24
12	11	1	-	-	-	29	17	12	-	29	1,163	40.10
20	16	2	1	1	-	57	38	19	-	57	2,037	35.74
21	19	1	-	1	-	89	54	35	-	88	3,524	40.05
9	8	-	-	1	-	16	6	10	-	16	837	52.31
9	9	-	-	-	-	16	7	9	-	16	448	28.00
80	35	32	1	12	-	208	122	86	-	208	5,099	24.51
51	14	21	11	5	-	86	42	43	1	85	2,194	25.81
6	5	-	1	-	-	7	4	3	-	7	332	47.43
8	7	-	-	1	-	24	11	13	-	22	1,269	57.68
31	15	13	1	2	-	39	20	19	-	39	1,047	26.85
29	21	5	-	3	-	53	25	27	1	53	1,276	24.08
8	8	-	-	-	-	21	10	11	-	20	1,034	51.70
13	9	4	-	-	-	49	26	23	-	48	1,838	34.67
3	2	1	-	-	-	9	5	4	-	9	431	47.89
7	7	-	-	-	-	24	10	14	-	24	1,046	43.58
10	10	-	-	-	-	7	3	4	-	7	414	59.14
11	8	1	-	2	-	25	14	11	-	25	1,102	44.08
15	15	-	-	-	-	23	11	12	-	23	833	36.22
11	11	-	-	-	-	15	6	9	-	15	797	53.13
11	9	2	-	-	-	29	11	18	-	29	1,252	43.17
12	7	5	-	-	-	37	16	21	-	37	1,656	44.76
66	13	48	1	4	-	95	41	54	-	94	2,303	24.50
35	14	9	2	10	-	60	32	28	-	60	1,210	20.17
13	10	-	2	1	-	25	14	11	-	25	1,092	43.68
15	13	1	1	-	-	40	19	21	-	40	1,372	34.30
20	13	7	-	-	-	34	18	16	-	34	1,271	37.38
21	17	3	-	1	-	49	28	21	-	49	1,700	34.69
15	13	2	-	-	-	27	12	15	-	27	1,051	38.93
19	8	6	3	2	-	38	20	18	-	38	1,155	30.39
30	17	7	2	4	-	27	9	18	-	27	864	32.00
70	21	37	5	7	-	55	29	26	-	54	1,614	29.89
37	28	4	3	2	-	67	44	23	-	67	1,803	26.91
25	8	10	4	3	-	44	16	28	-	43	1,102	25.63
11	10	-	-	1	-	35	18	16	1	35	1,226	35.03
12	10	-	1	1	-	35	13	22	-	35	1,515	43.29
50	35	11	2	2	-	73	41	32	-	73	2,197	30.10
492	267	159	19	47	-	895	476	417	2	895	20,416	22.81

TABLE II.—BIRTHS.—1870.

Distinguishing by Counties, by Months, and by Sex, the registered Number of Children BORN ALIVE during the year.

Year and Months.	SEX.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hamden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
The Year { Jan. Feb. Mar. Apr. May.	Totals,	38,259	669	1,616	2,682	99	4,772	644	1,969	1,019	7,444	2,256	1,463	8,614	5,012
	Males,	19,803	338	851	1,395	45	2,433	319	1,030	541	3,884	1,145	788	4,442	2,592
	Females,	18,484	331	764	1,284	54	2,330	324	939	478	3,560	1,109	675	4,172	2,414
	Unknown,	22	-	1	3	-	9	1	-	-	-	2	-	-	6
Jan.	Totals,	2,916	48	128	210	3	383	48	133	70	572	155	107	713	346
	Males,	1,489	20	65	104	-	209	24	69	37	277	77	60	352	195
	Females,	1,424	28	63	105	3	173	24	64	33	295	78	47	361	150
	Unknown,	3	-	-	1	-	1	-	-	-	-	-	-	-	1
Feb.	Totals,	2,650	36	114	210	7	303	29	141	64	500	174	84	649	339
	Males,	1,402	16	59	117	1	165	15	75	37	277	85	43	333	179
	Females,	1,247	20	55	93	6	137	14	66	27	223	89	41	316	160
	Unknown,	1	-	-	-	-	1	-	-	-	-	-	-	-	-
Mar.	Totals,	3,102	42	129	199	4	406	51	161	82	623	189	114	692	410
	Males,	1,651	22	79	105	4	220	28	81	39	325	98	57	375	218
	Females,	1,450	20	50	94	-	186	23	80	43	298	91	57	317	191
	Unknown,	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Apr.	Totals,	3,015	43	134	225	9	350	54	148	95	552	180	118	674	433
	Males,	1,585	20	62	123	4	169	32	80	46	303	99	61	344	242
	Females,	1,430	23	72	102	5	181	22	68	49	249	81	57	330	191
	Totals,	3,094	42	152	220	5	367	62	157	78	564	175	125	697	450
May.	Males,	1,583	23	83	110	1	196	26	77	48	295	90	73	328	233
	Females,	1,510	19	69	110	4	170	36	80	30	269	85	52	369	217
	Unknown,	1	-	-	-	-	1	-	-	-	-	-	-	-	-

SUPPLEMENT A.

PLURALITY BIRTHS—1870.

[Included in Tables I. and II.]

Year and Months.	SEX.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
THE YEAR.	Totals, .	697	18	51*	48	-	93*	15*	38	20	130	50	38	136	60
	Males, .	365	11	16	26	-	44	10	20	14	58	34	21	76	35
	Fem., .	332	7	35	22	-	49	5	18	6	72	16	17	60	25
Jan.	Totals, .	60	2	7	2	-	15	2	-	4	12	-	2	12	2
	Males, .	38	2	3	1	-	10	1	-	3	7	-	1	10	-
	Fem., .	22	-	4	1	-	5	1	-	1	5	-	1	2	2
Feb.	Totals, .	46	2	4	-	-	6	-	2	2	12	6	-	8	4
	Males, .	19	-	1	-	-	4	-	2	2	3	3	-	2	2
	Fem., .	27	2	3	-	-	2	-	-	-	9	3	-	6	2
Mar.	Totals, .	43	-	2	2	-	-	3	2	-	10	4	4	10	6
	Males, .	17	-	2	1	-	-	3	2	-	3	-	-	2	4
	Fem., .	26	-	-	1	-	-	-	-	-	7	4	4	8	2
Apr.	Totals, .	46	-	4	-	-	4	-	2	2	10	8	2	10	4
	Males, .	23	-	1	-	-	1	-	2	2	5	7	2	2	1
	Fem., .	23	-	3	-	-	3	-	-	-	5	1	-	8	3
May.	Totals, .	50	4	2	2	-	6	2	2	2	8	2	2	14	4
	Males, .	25	3	1	-	-	1	1	2	-	5	1	2	8	1
	Fem., .	25	1	1	2	-	5	1	-	2	3	1	-	6	3
June.	Totals, .	62	2	2	4	-	10	4	4	2	8	6	4	10	6
	Males, .	31	-	-	2	-	5	3	1	1	3	4	2	6	4
	Fem., .	31	2	2	2	-	5	1	3	1	5	2	2	4	2
July.	Totals, .	64	2	4	8	-	12	-	4	-	14	-	4	12	4
	Males, .	37	2	2	4	-	6	-	2	-	6	-	-	11	4
	Fem., .	27	-	2	4	-	6	-	2	-	8	-	4	1	-
Aug.	Totals, .	60	-	6	6	-	8	2	6	-	10	2	2	12	6
	Males, .	27	-	-	3	-	4	1	2	-	4	1	1	8	3
	Fem., .	33	-	6	3	-	4	1	4	-	6	1	1	4	3
Sept.	Totals, .	60	4	2	2	-	4	-	8	2	8	2	10	8	10
	Males, .	39	3	-	2	-	1	-	4	2	6	2	8	4	7
	Fem., .	21	1	2	-	-	3	-	4	-	2	-	2	4	3

SUPPLEMENT A.—Continued.

Months.	SEX.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
Oct.	Totals, .	85	-	8	8	-	14	-	6	-	14	6	4	13	12
	Males, .	43	-	2	5	-	7	-	1	-	7	5	3	6	7
	Fem., .	42	-	6	3	-	7	-	5	-	7	1	1	7	5
Nov.	Totals, .	47	2	2	2	-	6	2	-	2	6	6	4	13	2
	Males, .	26	1	-	2	-	2	1	-	1	3	4	2	8	2
	Fem., .	21	1	2	-	-	4	1	-	1	3	2	2	5	-
Dec.	Totals, .	74	-	8	12	-	8	-	2	4	18	8	-	14	-
	Males, .	42	-	4	6	-	3	-	2	3	6	7	-	11	-
	Fem., .	32	-	4	6	-	5	-	-	1	12	1	-	3	-

* Three cases of Triplets occurred in 1870; one of three males in Franklin County, and one comprising two males and a female in each of the counties of Berkshire and Essex. All were of Foreign Parentage.

SUPPLEMENT B.

ILLEGITIMATE BIRTHS—1870.

[Included in Tables I. and II.]

Year and Month.		Staffs.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
THE YEAR.	Totals, .	285	-	12	15	5	84	2	22	5	57	19	35	70	18
	Males, .	181	-	8	10	-	11	2	18	2	38	8	15	29	9
	Fem., .	154	-	8	5	5	23	-	9	3	24	9	20	41	7
Jan.	Totals, .	24	-	1	1	1	1	-	1	-	4	-	2	11	2
	Males, .	9	-	-	-	-	-	-	1	-	2	-	2	3	1
	Fem., .	15	-	1	1	1	1	-	-	-	2	-	-	8	1
Feb.	Totals, .	15	-	-	1	-	2	-	-	-	9	-	-	3	-
	Males, .	12	-	-	1	-	2	-	-	-	7	-	-	2	-
	Fem., .	3	-	-	-	-	-	-	-	-	2	-	-	1	-
Mar.	Totals, .	24	-	1	-	-	3	-	6	-	6	-	1	6	1
	Males, .	11	-	-	-	-	-	-	4	-	5	-	1	1	-
	Fem., .	13	-	1	-	-	3	-	2	-	1	-	-	5	1
Apr.	Totals, .	23	-	1	-	1	2	1	1	-	4	1	5	7	-
	Males, .	10	-	-	-	-	1	1	1	-	2	1	2	2	-
	Fem., .	13	-	1	-	1	1	-	-	-	2	-	3	5	-
May.	Totals, .	26	-	1	1	-	3	-	4	-	2	3	4	6	2
	Males, .	9	-	1	-	-	1	-	3	-	1	-	-	2	1
	Fem., .	17	-	-	1	-	2	-	1	-	1	■	4	4	1
June.	Totals, .	29	-	2	1	-	4	-	1	1	7	1	1	10	1
	Males, .	14	-	1	1	-	1	-	1	-	3	-	-	6	1
	Fem., .	15	-	1	-	-	3	-	-	1	4	1	1	4	-
July.	Totals, .	27	-	1	1	-	3	-	2	1	3	■	4	4	4
	Males, .	8	-	-	-	-	-	-	1	-	1	1	2	1	2
	Fem., .	19	-	1	1	-	3	-	1	1	4	1	2	3	■
Aug.	Totals, .	22	-	1	2	-	4	-	1	-	■	-	1	3	2
	Males, .	12	-	1	2	-	1	-	-	-	3	-	1	3	1
	Fem., .	10	-	-	-	-	3	-	1	-	5	-	-	-	1
Sept.	Totals, .	14	-	-	1	-	2	-	-	1	2	2	3	3	-
	Males, .	6	-	-	1	-	-	-	-	1	1	-	2	1	-
	Fem., .	8	-	-	-	-	2	-	-	-	1	2	1	2	-

SUPPLEMENT B—Concluded.

Months.	SEX.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
Oct.	Totals, .	23	-	3	3	-	3	1	-	1	1	-	3	6	2
	Males, .	11	-	1	3	-	1	1	-	1	1	-	1	1	1
	Fem., .	12	-	2	-	-	2	-	-	-	-	-	2	5	1
Nov.	Totals, .	31	-	-	2	1	2	-	1	1	5	2	8	8	1
	Males, .	18	-	-	2	-	1	-	-	-	4	1	4	5	1
	Fem., .	13	-	-	-	1	1	-	1	1	1	1	4	3	-
Dec.	Totals, .	27	-	1	2	2	5	-	5	-	4	1	3	3	1
	Males, .	11	-	-	-	-	3	-	2	-	3	-	-	2	1
	Fem., .	16	-	1	2	2	2	-	3	-	1	1	3	1	-

TABLE III.—STILLBORN.

Distinguishing by Counties, by Months, and by Sex, the registered Number of Still-births during the year

1870.

Year and Month.	SEX.	State.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.										Worcester.
THE YEAR.	Totals, .	1019	10	7	9	3	139	5	31	12	146	20	11	521	78	
	Males, .	578	7	4	8	2	69	5	17	9	90	25	6	295	36	
	Fem., .	389	3	3	1	1	63	-	11	2	44	20	6	218	22	
	Unk., .	57	-	-	-	-	7	-	8	1	12	1	2	13	15	
Jan.	Totals, .	78	-	-	-	-	8	-	2	-	13	3	1	49	2	
	Males, .	46	-	-	-	-	6	-	1	-	6	2	-	30	1	
	Fem., .	24	-	-	-	-	2	-	1	-	1	-	-	16	1	
	Unk., .	8	-	-	-	-	-	-	-	-	3	1	1	3	-	
Feb.	Totals, .	62	-	1	-	-	12	-	-	-	7	3	1	34	4	
	Males, .	36	-	1	-	-	5	-	-	-	5	1	-	21	3	
	Fem., .	21	-	-	-	-	5	-	-	-	1	2	1	12	-	
	Unk., .	5	-	-	-	-	2	-	-	-	1	-	-	1	1	
Mar.	Totals, .	89	1	1	1	-	20	-	5	1	1	4	1	45	4	
	Males, .	49	-	1	1	-	15	-	2	1	3	1	-	21	1	
	Fem., .	34	1	-	-	-	5	-	2	-	2	-	1	22	1	
	Unk., .	6	-	-	-	-	-	-	1	-	1	-	-	2	2	
Apr.	Totals, .	92	1	-	1	-	18	-	2	3	12	4	1	50	5	
	Males, .	53	1	-	1	-	6	-	1	3	3	2	-	31	4	
	Fem., .	34	-	-	-	-	7	-	-	-	6	1	1	19	-	
	Unk., .	5	-	-	-	-	-	-	-	-	3	1	-	-	1	
May.	Totals, .	89	1	2	2	1	18	-	2	1	13	-	-	34	6	
	Males, .	49	1	2	2	-	5	-	2	1	6	-	-	25	5	
	Fem., .	38	-	-	-	1	8	-	-	-	7	-	-	21	1	
	Unk., .	2	-	-	-	-	-	-	-	-	-	-	-	2	-	
June.	Totals, .	74	-	1	-	1	7	1	2	-	8	7	2	35	10	
	Males, .	40	-	-	-	1	5	1	-	-	7	2	1	18	5	
	Fem., .	30	-	1	-	-	1	-	1	-	1	5	1	17	2	
	Unk., .	4	-	-	-	-	-	-	1	-	-	-	-	-	3	

TABLE IV.—MARRIAGES.

Distinguishing by Counties, and by Months, the Number of Marriages registered during the year

1870.

YEAR AND MONTHS.	Essex.	Barnstable.	Berkshire.	Bristol.	Duke.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Nantucket.	Norfolk.	Plymouth.	Suffolk.	Worcester.
THE YEAR,	14,721				32	2086	231	847	434	2714	32	698	535	3535	1854
January, .	1,363				2	178	17	84	84	240	3	69	62	348	165
February, .	1,163				5	164	19	77	41	215	2	42	36	292	144
March, .	751				1	126	22	40	26	121	2	30	40	158	98
April, .	953				2	136	19	51	47	171	2	51	47	223	116
May, .	1,814				3	100	17	93	33	224	2	70	46	343	166
June, .	1,353				-	184	23	71	35	249	2	76	44	319	172
July, .	1,053				1	178	19	49	29	180	5	41	33	269	141
August, .	944				4	140	14	59	21	182	3	34	23	287	131
September, .	1,253				4	171	14	62	35	274	1	74	38	305	143
October, .	1,441				4	184	16	80	42	277	4	61	48	369	207
November, .	1,931				3	287	28	119	47	356	1	94	92	435	230
December, .	1,181				3	169	23	63	40	224	5	56	47	237	141
Unknown, .					-	-	-	-	-	1	-	-	-	-	-

TABLE V.—Continued.

(B.) First Marriage of Male and subsequent Marriage of Female.

[illegible]

(C.) Subsequent **Marriage** of the **Male** but **First Marriage** of the **Female**.

ALL AGES,	1,445	112	397	380	175	83	2	2	-	-	-	3
Und. 20,	-	-	-	-	-	-	-	-	-	-	-	-
20 to 25,	40	13	18	9	-	-	-	-	-	-	-	-
25 to 30,	254	44	118	76	14	1	-	-	-	-	-	-
30 to 35,	319	30	125	108	44	12	-	-	-	-	-	-
35 to 40,	295	15	51	94	67	31	5	-	-	-	-	-
40 to 45,	202	8	31	59	42	42	16	-	-	-	-	-
45 to 50,	133	1	7	22	31	40	14	-	-	-	-	-
50 to 55,	89	1	4	11	13	21	20	-	-	-	-	-
55 to 60,	60	-	4	4	11	14	15	-	-	-	-	-
60 to 65,	30	-	1	-	1	5	8	1	2	-	-	-
65 to 70,	12	-	2	1	-	1	1	-	-	-	-	-
70 to 75,	3	-	-	-	-	-	-	-	-	-	-	-
75 to 80,	2	-	-	-	-	-	1	-	-	-	-	-
Over 80,	1	-	-	-	-	1	-	-	-	-	-	-
Unk.,	5	-	1	-	-	1	-	-	-	-	-	3

TABLE VI.—DEATHS.

*Distinguishing by Counties, by Months, and by Sex, the registered
Number of Persons who Died during the year*

1870.

Year and Month.	SEX.											AT HOMES.	Plymouth.	Suffolk.	Worcester.
THE YEAR.	Tota											99	1062	6428	1165
	Male											84	535	3267	1780
	Fem											12	523	3160	1679
	Unk.,	82	-	3	4	-	6	1	-	1	3	8	4	1	6
Jan.	Totals,	2,072	23	87	155	10	275	40	97	45	414	97	86	502	261
	Males,	1,061	9	37	78	5	149	23	47	18	221	48	44	259	128
	Fem.,	1,011	14	30	77	5	126	17	50	27	193	54	42	243	133
Feb.	Totals,	1,907	38	84	121	8	227	36	106	40	374	104	59	465	245
	Males,	936	26	42	77	4	104	19	52	21	173	50	24	227	127
	Fem.,	970	12	42	54	4	123	17	54	19	201	53	35	238	118
	Unk.,	1	-	-	-	-	-	-	-	-	-	1	-	-	-
Mar.	Totals,	2,091	31	86	144	14	267	38	133	70	368	90	94	512	244
	Males,	1,012	12	41	68	6	120	22	58	33	171	40	36	267	132
	Fem.,	1,076	19	45	75	8	146	16	75	37	197	44	58	245	111
	Unk.,	3	-	-	1	-	1	-	-	-	-	-	-	-	1
Apr.	Totals,	1,968	23	75	131	8	225	39	95	51	365	106	92	482	277
	Males,	999	9	36	59	4	118	21	53	22	185	46	51	250	145
	Fem.,	968	14	39	72	4	107	18	42	29	180	59	41	232	131
	Unk.,	1	-	-	-	-	-	-	-	-	-	-	-	-	1
May.	Totals,	2,035	33	59	114	20	284	37	119	64	352	104	89	479	261
	Males,	1,006	20	28	73	11	146	16	62	23	157	40	47	244	139
	Fem.,	1,029	13	31	71	9	138	21	57	31	195	64	42	235	122
June.	Totals,	1,872	41	73	141	8	247	47	101	61	364	111	66	422	221
	Males,	951	24	43	68	4	121	22	53	23	173	54	40	224	113
	Fem.,	918	17	30	73	4	124	25	48	37	191	43	26	197	103
	Unk.,	3	-	-	-	-	2	-	-	-	-	-	-	1	-
July.	Totals,	2,827	49	98	182	10	306	62	179	102	500	146	80	746	367
	Males,	1,388	31	47	90	4	147	30	96	53	238	81	40	351	182
	Fem.,	1,434	20	50	92	6	158	31	83	49	262	65	39	395	185
	Unk.,	5	-	1	-	-	1	1	-	1	-	-	1	-	-

TABLE VI.—Concluded.

Months.	SEX.	State.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
Aug.	Totals,		61	114	208	13	437	68	175	107	649	176	132	716	429
	Males,		29	73	111	8	212	33	90	52	336	87	71	370	233
	Fem.,		32	41	97	5	225	35	85	55	312	89	61	346	196
	Unk.,		-	-	-	-	-	-	-	-	1	-	-	-	-
Sept.	Totals,		47	96	181	9	366	55	147	70	501	149	111	607	357
	Males,		26	52	90	4	202	16	70	36	218	75	58	304	183
	Fem.,		21	42	91	5	163	39	77	34	282	73	51	303	174
	Unk.,		-	2	-	-	1	-	-	-	1	1	2	-	-
Oct.	Totals,		62	73	179	26	346	51	107	51	453	123	94	559	288
	Males,		31	44	94	13	185	19	60	29	216	65	53	283	150
	Fem.,		31	29	84	13	161	32	47	22	237	58	41	276	138
	Unk.,		-	-	1	-	-	-	-	-	-	-	-	-	-
Nov.	Totals,		37	80	135	19	280	40	117	57	319	105	76	472	251
	Males,		16	45	61	9	139	21	55	31	197	52	37	240	115
	Fem.,		21	35	74	10	141	19	62	26	215	53	38	232	135
	Unk.,		-	-	-	-	-	-	-	-	-	-	1	-	1
Dec.	Totals,		31	90	141	18	235	41	120	58	417	119	83	466	268
	Males,		13	48	70	10	115	18	60	25	214	61	34	248	128
	Fem.,		18	42	69	8	119	23	60	28	202	57	49	218	137
	Unk.,		-	-	2	-	1	-	-	-	1	1	-	-	8
Unk.	Totals,		-	1	-	-	1	-	3	-	-	-	-	-	1
	Males,		-	1	-	-	1	-	1	-	-	-	-	-	-
	Fem.,		-	-	-	-	-	-	2	-	-	-	-	-	1

TABLE VII.—DEATHS BY AGE AND SEX,

Distinguishing by Age and by Sex, the Number of Deaths registered in each County distinguishing Sex, according to the U. S. Census of 1870,—and also with the

STATE AND COUNTIES.	Population. U. S. Census, 1870.		Percentage of Deaths to Pop.	No. of Deaths Regist'd 1870.	Under 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 15
MASSACHUSETTS	1,457,851 708,779 758,572 —	Per. Ma. Fe. U.	1.88 1.94 1.81 —	27,329 18,699 18,598 82	6,208 8,482 2,748 81	1,945 1,010 935 —	869 451 417 1	500 259 241 —	853 169 184 —	825 418 412 —	556 258 298 —
BARNSTABLE Co.,	82,774 16,085 16,789	Per. Ma. Fe.	1.45 1.62 1.89	476 244 282	65 88 27	16 12 4	18 12 6	6 5 1	4 1 8	10 5 5	10 8 7
BERKSHIRE COUNTY,	64,827 82,294 82,538 —	Per. Ma. Fe. U.	1.54 1.66 1.40 —	993 587 456 8	199 121 75 8	65 42 23 —	86 24 12 —	21 15 6 —	18 8 5 —	27 18 14 —	28 17 11 —
BRISTOL COUNTY,	102,896 49,419 58,467 —	Per. Ma. Fe. U.	1.81 1.88 1.74 —	1,862 929 929 4	414 229 181 4	112 67 45 —	52 28 24 —	24 14 10 —	24 14 10 —	49 19 80 —	26 6 20 1
DUKES COUNTY,	8,787 1,819 1,968	Per. Ma. Fe.	1.43 1.81 1.88	70 88 87	8 4 4	— — —	— — —	1 — 1	— — —	— — —	— — 1
ESSEX COUNTY,	200,848 96,498 106,845 —	Per. Ma. Fe. U.	1.74 1.84 1.64 —	8,496 1,759 1,781 6	762 418 848 6	216 125 91 —	84 87 47 —	78 89 89 —	51 25 26 —	104 55 49 —	78 84 44 —
FRANKLIN COUNTY,	32,685 16,862 16,278 —	Per. Ma. Fe. U.	1.70 1.59 1.80 —	554 260 293 1	80 41 38 1	34 13 21 —	12 7 5 —	4 1 3 —	5 2 3 —	14 10 4 —	16 8 8 —
HAMPDEN COUNTY,	78,409 87,882 41,027	Per. Ma. Fe.	1.91 2.02 1.81	1,499 757 742	328 188 140	109 49 60	58 28 80	32 12 20	28 9 14	57 85 22	40 29 11
HAMPSHIRE Co.,	44,888 21,443 22,945 —	Per. Ma. Fe. U.	1.71 1.71 1.71 —	760 866 893 1	185 67 67 1	46 24 22 —	28 10 13 —	11 5 6 —	8 — 8 —	36 17 19 —	14 11 3 —
MIDDLESEX COUNTY,	274,858 181,959 142,894 —	Per. Ma. Fe. U.	1.88 1.89 1.87 —	5,169 2,499 2,667 8	1,225 688 535 2	831 176 205 —	170 88 81 1	81 37 44 —	76 41 35 —	167 69 96 —	110 44 66 —
NANTUCKET Co.,	4,128 1,825 2,298	Per. Ma. Fe.	2.26 2.68 1.91	98 49 44	4 4 —	2 1 1	3 — 3	1 1 —	1 1 —	3 — 3	4 1 3
NORFOLK COUNTY,	89,448 42,944 46,499 —	Per. Ma. Fe. U.	1.56 1.59 1.53 —	1,399 624 712 8	292 161 128 8	74 42 32 —	89 19 20 —	29 14 15 —	15 10 5 —	39 21 18 —	24 9 15 —
PLYMOUTH COUNTY,	65,335 32,116 33,249 —	Per. Ma. Fe. U.	1.63 1.67 1.57 —	1,062 535 523 4	169 92 78 4	49 24 25 —	17 10 7 —	14 4 10 —	7 2 5 —	21 9 12 —	27 11 16 —
SUFFOLK COUNTY,	270,802 129,482 141,320 —	Per. Ma. Fe. U.	2.37 2.52 2.24 —	6,428 8,267 8,160 1	1,746 955 790 1	564 284 250 —	233 120 113 —	181 73 58 —	89 37 52 —	187 102 85 —	104 47 57 —
WORCESTER Co.,	192,716 95,201 97,515 —	Per. Ma. Fe. U.	1.80 1.87 1.72 —	8,465 1,780 1,679 6	779 481 343 6	277 151 126 —	124 68 58 —	67 39 28 —	42 19 23 —	111 58 53 —	74 33 36 —

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons	Sex.					
BARNSTABLE CO.	32,774	{ Tot. 32,774 Ma. 16,035 Fe. 16,739	. 1.45	. 476	476 244 232	65 38 27	16 12 4	18 12 6	6 5 1	4 3
Barnstable, .	4,793	{ Ma. 2,298 Fe. 2,495	1.38	66	34 32	— 2	1 —	2 —	— —	— 2
Brewster, .	1,259	{ Ma. 614 Fe. 645	1.83	23	14 9	4 —	— —	1 —	— —	— —
Chatham, .	2,411	{ Ma. 1,197 Fe. 1,214	1.04	25	10 15	— —	— —	— —	1 —	— —
Dennis, .	3,269	{ Ma. 1,578 Fe. 1,691	1.68	55	28 27	6 6	2 —	2 1	1 —	— —
Eastham, .	668	{ Ma. 347 Fe. 321	1.05	7	4 3	1 —	— —	— —	— —	— —
Falmouth, .	2,237	{ Ma. 1,111 Fe. 1,126	1.43	32	12 20	2 1	— —	2 1	— —	— —
Harwich, .	3,080	{ Ma. 1,540 Fe. 1,540	1.33	41	23 18	1 1	3 1	— —	1 —	1 1
Mashpee, .	348	{ Ma. 160 Fe. 188	2.30	8	1 7	1 1	— 1	— —	— —	— —
Orleans, .	1,323	{ Ma. 630 Fe. 693	2.12	28	13 15	3 2	2 1	— 1	— —	— —
Provincetown, .	3,865	{ Ma. 1,907 Fe. 1,958	1.37	53	28 25	12 7	1 —	2 —	— —	— —
Sandwich, .	3,694	{ Ma. 1,800 Fe. 1,894	1.60	59	38 21	4 2	— —	— 2	2 —	— —
Truro, .	1,269	{ Ma. 625 Fe. 644	1.34	17	9 8	1 1	1 —	— —	— —	— —
Wellfleet, .	2,135	{ Ma. 1,085 Fe. 1,050	1.50	32	13 19	2 1	1 —	— 1	1 —	— —
Yarmouth, .	2,423	{ Ma. 1,143 Fe. 1,280	1.24	30	17 13	1 3	1 1	3 —	— —	— —
BERKSHIRE CO.,	64,827	{ Tot. 64,827 Ma. 32,294 Fe. 32,533 U. .	. 1.54	. 996	996 537 456 3	199 121 75 3	65 42 23 —	36 24 12 —	21 15 6 —	13 8 5 —
Adams, .	12,090	{ Ma. 6,063 Fe. 6,027	1.79	217	103 114	33 29	15 6	10 5	2 2	2 2
Alford, .	430	{ Ma. 223 Fe. 207	3.93	13	12 1	2 —	2 —	1 —	— —	— —
Becket, .	1,346	{ Ma. 683 Fe. 663	1.19	16	7 9	— 1	1 —	— —	1 2	— 1
Cheshire, .	1,758	{ Ma. 876 Fe. 882	.57	10	4 6	2 1	— —	— —	— —	— —

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown.
10	10	23	30	29	13	17	14	16	23	21	21	22	39	24	26	13	7	3	6
5	3	11	11	18	7	5	6	8	12	17	11	12	15	10	11	6	4	-	4
5	7	12	19	11	6	12	8	8	11	4	10	10	24	14	15	7	3	3	2
2	1	4	1	2	-	1	1	1	3	4	2	2	2	1	2	2	-	-	-
2	1	-	2	-	1	2	1	1	1	1	2	4	2	3	4	-	1	-	-
-	-	-	-	1	-	-	1	1	1	2	-	-	-	-	1	1	-	-	1
-	-	-	3	1	-	-	-	-	-	-	1	-	1	1	-	1	-	1	-
-	-	1	-	2	-	-	-	-	1	1	-	2	-	1	1	1	-	-	-
-	-	1	1	-	2	1	3	-	-	-	1	1	1	1	1	1	-	-	-
1	-	1	-	3	1	-	-	2	1	2	1	1	2	1	1	-	-	-	-
-	2	3	2	3	-	-	-	-	1	-	1	-	1	1	3	1	2	-	-
-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-
-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-
-	1	1	2	1	2	-	-	-	2	-	2	-	5	1	2	-	-	1	1
-	-	1	4	1	2	2	-	-	-	1	1	1	-	2	-	1	-	-	-
-	-	1	4	-	-	2	1	-	1	-	-	2	2	1	-	1	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	-	-	1	1	-	1	-	1	-	-	-	-	-
-	1	1	-	1	-	-	-	1	-	1	2	-	2	-	-	-	1	-	-
-	1	1	-	1	-	-	-	2	1	-	-	1	1	1	1	1	-	-	-
-	-	-	1	2	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-
2	-	-	1	3	1	3	-	3	1	2	-	-	1	-	1	-	-	-	-
1	-	2	2	5	1	1	1	1	4	1	2	2	2	-	4	-	1	-	2
-	2	3	-	1	-	-	1	1	-	-	-	-	6	2	-	-	-	1	-
-	1	-	2	-	-	1	1	-	-	-	-	1	-	-	-	-	1	-	-
-	-	-	1	1	2	-	1	1	-	-	-	-	1	-	-	-	-	-	-
-	1	1	-	-	1	-	-	1	-	-	1	2	-	1	1	-	-	-	1
-	-	2	3	1	-	1	1	-	2	-	1	-	1	1	2	1	-	-	-
1	-	-	1	1	-	-	1	-	1	-	-	1	3	2	1	-	-	-	-
1	-	-	-	-	-	-	-	-	1	-	2	-	2	1	1	1	-	-	-
27	28	43	58	29	25	43	27	26	31	36	41	53	47	38	47	34	8	7	14
13	17	19	29	11	11	22	10	11	15	20	23	30	29	16	24	12	2	3	10
14	11	24	29	18	14	21	17	15	16	16	18	23	18	22	23	22	6	4	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	3	1	6	2	-	3	4	3	1	2	5	4	2	1	1	-	-	-	1
1	2	8	9	6	3	3	3	2	1	4	6	3	4	5	2	4	-	2	2
1	-	-	-	-	-	1	-	-	-	-	-	1	1	-	3	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-
2	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	-	-	-	1	-	-	-	1	-	1	-	1	-	2

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons.	Sex.					
<i>Berkshire—Con.</i>										
Clarksburg, .	686	{ Ma. 362 Fe. 324	2.92	2	1 1	— —	— —	— —	— —	— —
Dalton, .	1,252	{ Ma. 585 Fe. 667	1.68	21	14 7	3 1	1 1	— —	— —	— —
Egremont, .	931	{ Ma. 450 Fe. 481	1.29	12	6 6	1 —	— —	— —	— —	— —
Florida, .	1,322	{ Ma. 803 Fe. 519	1.59	21	13 8	1 1	2 —	— —	— —	— —
Gt. Barrington, .	4,320	{ Ma. 2,033 Fe. 2,287	1.74	75	37 38	9 4	2 5	— —	1 —	1 1
Hancock, .	882	{ Ma. 455 Fe. 427	.91	8	4 4	1 —	— —	— —	— —	— —
Hinsdale, .	1,695	{ Ma. 800 Fe. 895	2.36	40	24 16	3 1	1 —	2 1	1 1	2 —
Lanesborough, .	1,393	{ Ma. 701 Fe. 692	1.36	19	9 10	— 1	1 —	— 1	2 —	— —
Lee, .	3,866	{ Ma. 1,816 Fe. 2,050	1.71	66	42 24	13 2	4 —	2 —	1 —	2 —
Lenox, .	1,965	{ Ma. 1,002 Fe. 963 U. .	1.53	30	13 16 1	7 3 1	— — —	— — —	1 — —	— — —
Monterey, .	653	{ Ma. 321 Fe. 332	1.88	9	4 5	— —	— —	— —	— —	— —
Mt. Washington, .	256	{ Ma. 122 Fe. 134	1.56	4	3 1	— —	— —	— —	— —	— —
New Ashford, .	208	{ Ma. 121 Fe. 87	.96	2	1 1	— —	— —	— —	— —	— —
New Marlboro', .	1,855	{ Ma. 954 Fe. 901	1.62	30	18 12	2 1	1 —	1 1	— —	— —
Otis, .	960	{ Ma. 497 Fe. 463	1.25	12	8 4	2 —	2 —	— —	— —	— —
Peru, .	455	{ Ma. 241 Fe. 214	2.02	9	6 3	— —	1 —	1 —	1 —	— —
Pittsfield, .	11,112	{ Ma. 5,288 Fe. 5,824 U. .	1.55	172	94 77 1	28 20 1	5 7 —	1 3 —	3 — —	— — —
Richmond, .	1,091	{ Ma. 569 Fe. 522	1.65	18	8 10	1 2	1 —	— —	— —	— 1
Sandisfield, .	1,482	{ Ma. 788 Fe. 694	.88	13	9 4	— —	— 1	1 —	1 —	— —
Savoy, .	861	{ Ma. 451 Fe. 410	1.86	16	9 7	1 —	— —	— —	— —	— —

Age and Sex, by Towns.

2	3	3	1	-	2	1	-	2	1	1	-	6	1	-	3	-	-	-	-
-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
3	2	1	1	2	-	1	-	1	-	1	1	2	-	2	1	2	1	-	-
-	1	-	-	-	1	-	1	-	-	1	-	1	-	1	-	1	-	-	-
2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	1	2	1	2	1	6	1	-	2	1	2	1	1	1	3	-	1	-	1
-	2	1	-	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	2	-	-	1	-	-	1	-	-	-	-	-	1	-	-	-	-
-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
1	1	3	-	-	-	-	-	-	-	-	-	2	4	1	1	-	-	-	1
-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	-	-	1	-	-	-	1	-	-	-	-	-	-
2	4	3	6	2	1	4	2	1	1	3	6	7	5	4	5	3	1	1	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	1	-	-	-	-	-	1	1	1	-	-	-	-	-	1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	1	-	-	-	-	-	-	1	1	1	-	-	-	-	1	-	-
-	-	-	1	-	-	1	1	-	-	1	1	1	-	-	-	-	2	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons.	Sex.					
<i>Berkshire—Con.</i>										
Sheffield, . .	2,535	{ Ma. 1,254 Fe. 1,281	1·81	46	25 21	2 1	1 —	— —	1 —	— —
Stockbridge, .	2,003	{ Ma. 964 Fe. 1,039	1·20	24	14 10	2 2	— —	2 —	— 1	— —
Tyringham, .	557	{ Ma. 269 Fe. 288	1·44	8	4 4	— 1	— —	— —	— —	— —
Washington, .	694	{ Ma. 373 Fe. 321	1·15	8	6 2	2 —	— —	— —	— —	— —
W. Stockbridge,	1,924	{ Ma. 1,009 Fe. 915	1·98	38	21 17	— 3	1 3	2 —	— —	1 —
Williamstown, .	3,559	{ Mu. 1,854 Fe. 1,705 U. .	·90	32	14 17 1	4 1 1	1 — —	1 1 —	— — —	— — —
Windsor, . .	686	{ Ma. 367 Fe. 319	·73	5	4 1	2 —	— —	— —	— —	— —
BRISTOL CO., .	102,886	{ Tot. 102,886 Ma. 49,419 Fe. 53,467 U. .	. 1·81 .	. 1,862 .	1,862 929 929 4	414 229 181 4	112 67 45 —	52 28 24 —	24 14 10 —	24 14 10 —
Acushnet, . .	1,182	{ Ma. 557 Fe. 575	2·12	24	16 8	1 —	1 —	1 —	— —	— —
Attleborough, .	6,769	{ Ma. 3,309 Fe. 3,460	2·14	145	62 83	9 11	4 3	5 5	1 1	2 1
Berkley, . .	744	{ Ma. 368 Fe. 370	1·48	11	9 2	2 1	1 —	— —	— —	— —
Dartmouth, .	3,367	{ Ma. 1,643 Fe. 1,724	1·87	63	41 22	10 6	1 1	— —	1 —	— —
Dighton, . .	1,817	{ Ma. 881 Fe. 936 U. .	1·32 .	24 .	7 16 1	2 2 1	— — —	— — —	— — —	— — —
Easton, . .	3,668	{ Ma. 1,911 Fe. 1,757	1·12	41	22 19	7 4	2 1	1 1	— —	1 —
Fairhaven, . .	2,626	{ Ma. 1,240 Fe. 1,386	2·02	53	29 24	12 2	1 1	— —	— —	— —
Fall River, . .	26,766	{ Ma. 12,652 Fe. 14,114	2·08	558	287 271	103 80	30 18	7 11	5 8	2 1
Freetown, . .	1,372	{ Ma. 670 Fe. 702	·88	12	8 4	1 —	— —	— —	— —	— —
Mansfield, . .	2,432	{ Ma. 1,196 Fe. 1,236	1·19	29	16 13	1 3	1 —	1 —	— —	2 —
New Bedford, .	21,320	{ Ma. 9,880 Fe. 11,440	1·78	379	167 212	34 36	14 7	4 4	2 —	2 5

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown.
-	1	2	2	1	1	1	-	1	-	-	-	-	4	1	5	1	-	-	1
1	-	2	2	-	1	2	-	1	-	-	-	2	1	3	3	2	-	-	-
-	-	1	1	1	-	-	-	-	1	3	-	1	1	1	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	2	-	1	1	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-
-	-	-	-	-	-	1	-	-	-	-	-	1	1	-	1	1	-	-	-
-	-	2	4	-	2	-	1	-	1	2	2	-	1	-	1	-	-	-	1
1	2	-	-	-	1	1	-	1	1	-	2	-	-	-	1	1	-	-	-
1	-	-	-	-	1	-	-	-	1	-	-	-	2	1	2	-	-	-	-
-	-	1	3	-	2	-	-	3	-	1	1	1	1	-	-	2	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
49	26	66	107	81	66	62	70	66	71	70	87	84	82	88	62	65	14	6	14
19	6	24	48	37	22	33	33	40	39	37	47	43	40	41	27	26	9	2	4
30	20	42	59	44	44	29	37	26	32	33	40	41	42	47	35	39	5	4	10
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	2	-	-	1	-	-	2	-	1	-	1	1	2	1	1	1	-
-	-	-	1	-	-	-	-	1	1	-	-	-	-	1	1	1	-	-	2
2	-	5	4	4	-	1	3	1	-	4	5	1	5	-	1	4	1	-	-
5	1	5	7	1	3	4	4	4	4	2	3	1	5	6	3	4	-	-	-
1	1	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-	1	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
-	-	-	2	-	-	1	1	2	4	5	1	1	1	2	3	5	1	-	-
-	-	-	1	2	-	-	1	-	-	3	1	2	1	-	1	3	-	-	-
-	-	1	-	-	-	-	-	1	1	-	1	-	-	1	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	1	1	3	-	-	-	-	1	-	-	3	3	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	1	1	-	1	2	-	2	-	-	-	1	-	2	1	-	-	-	-
-	1	-	-	1	1	-	-	-	-	1	-	1	-	2	3	2	-	1	-
-	-	-	1	1	1	-	2	-	-	-	1	2	3	2	1	1	1	-	-
-	-	1	4	1	-	-	1	-	-	1	-	2	3	1	2	3	2	-	-
5	2	3	14	17	2	8	12	11	10	13	12	12	7	6	3	1	1	-	1
11	6	12	11	15	17	5	7	6	5	10	9	8	7	7	7	3	1	2	4
-	-	-	-	1	-	1	1	-	-	1	1	-	-	2	-	-	-	-	-
-	1	1	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-
-	-	2	1	1	1	2	1	-	-	1	-	1	-	-	-	1	-	-	-
1	-	-	1	-	-	1	2	-	1	-	-	-	-	1	1	2	-	-	-
3	1	5	11	3	9	7	5	3	7	6	11	8	10	10	8	1	1	-	2
6	5	8	21	11	6	9	7	8	12	7	12	15	10	9	5	7	-	-	2

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons.	Sex.					
<i>Bristol—Con.</i>										
Norton, . . .	1,821	{ Ma. 812 Fe. 1,009	1.10	20	11 9	— 1	— —	1 —	— —	— —
Raynham, . . .	1,713	{ Ma. 842 Fe. 871	1.52	26	11 15	1 3	— —	— —	— —	— —
Rehoboth, . . .	1,895	{ Ma. 918 Fe. 977	.95	18	12 6	1 —	— —	— 1	— —	— —
Seekonk, . . .	1,021	{ Ma. 512 Fe. 509	1.37	14	6 8	— —	— 1	1 —	— —	— 1
Somerset, . . .	1,776	{ Ma. 929 Fe. 847	1.52	27	14 13	4 2	— 1	1 —	— —	— —
Swansey, . . .	1,294	{ Ma. 615 Fe. 679	1.39	18	5 13	— —	— —	— —	— —	— —
Taunton, . . .	18,629	{ Ma. 9,124 Fe. 9,505 U. .	1.98	368	182 183 3	37 29 3	12 12 —	6 2 —	4 1 —	5 2 —
Westport, . . .	2,724	{ Ma. 1,360 Fe. 1,364	1.17	32	24 8	4 1	— —	— —	1 —	— —
DUKES COUNTY,	3,787	{ Tot. 3,787 Ma. 1,819 Fe. 1,968	. 1.43	. 70	70 33 37	8 4 4	— — —	— — —	1 — 1	— — —
Chilmark, . . .	476	{ Ma. 238 Fe. 238	1.26	6	2 4	— 1	— —	— —	— —	— —
Edgartown, . . .	1,516	{ Ma. 704 Fe. 812	1.45	22	9 13	1 2	— —	— —	— 1	— —
Gay Head, . . .	160	{ Ma. 82 Fe. 78	1.25	2	— 2	— —	— —	— —	— —	— —
Gosnold, . . .	99	{ Ma. 55 Fe. 44	3.03	3	3 —	1 —	— —	— —	— —	— —
Tisbury, . . .	1,536	{ Ma. 740 Fe. 796	2.41	37	19 18	2 1	— —	— —	— —	— —
Essex COUNTY,	200,843	{ Tot. 200,843 Ma. 95,498 Fe. 105,345 U. .	. 1.74	. 3,496	3,496 1,759 1,731 6	762 413 343 6	216 125 91 —	84 37 47 —	78 39 39 —	51 25 26 —
Amesbury, . . .	5,581	{ Ma. 2,780 Fe. 2,801	1.43	80	47 33	14 5	3 2	— 1	— 2	— —
Andover, . . .	4,873	{ Ma. 2,304 Fe. 2,569	1.58	77	40 37	7 7	2 1	1 1	2 1	1 —
Beverly, . . .	6,507	{ Ma. 3,112 Fe. 3,395	1.47	96	34 62	10 12	3 4	— 1	— 1	— —
Boxford, . . .	847	{ Ma. 432 Fe. 415	1.18	10	6 4	— —	— —	— —	— —	— —

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown.
-	-	-	-	-	1	-	-	1	-	1	-	1	1	2	-	2	-	1	-
1	-	-	1	1	1	1	1	1	-	2	-	1	-	-	-	1	-	-	-
-	-	1	1	-	1	-	-	-	-	-	-	1	1	2	3	1	-	-	-
-	-	-	2	-	-	-	-	-	-	-	1	1	-	-	-	-	1	1	-
-	-	-	-	-	-	-	2	1	1	1	-	1	-	1	-	-	-	-	-
-	-	-	-	1	-	-	-	-	1	-	1	2	-	3	1	-	-	-	-
-	-	-	-	-	1	-	2	1	-	1	-	-	2	3	-	-	-	-	-
-	1	1	2	1	-	-	1	-	1	-	-	-	1	1	-	2	-	-	-
8	1	5	10	8	4	8	4	17	10	4	11	9	7	3	2	5	1	-	1
5	5	14	8	10	11	9	8	6	6	6	10	9	4	7	7	10	1	1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	1	1	3	-	3	1	-	3	2	2	2	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	1	1	-	-	1
-	1	1	10	3	3	2	3	6	1	3	4	2	9	1	7	2	2	1	-
-	1	-	6	3	1	2	1	3	1	-	2	1	4	-	3	-	1	-	-
-	-	-	4	-	2	-	2	3	-	3	2	1	5	1	4	2	1	1	-
-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	1	1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	2	-	-	1	-	-	1	-	-	-	1	-	-	-	-	-	-
-	-	-	1	-	-	-	1	-	-	2	-	-	3	-	3	1	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
-	-	1	3	3	1	1	1	2	-	-	2	1	1	-	-	-	1	-	-
-	1	-	1	-	2	-	1	3	-	1	2	1	1	1	2	1	-	-	-
104	78	135	181	197	126	140	121	124	109	106	121	129	172	132	106	87	26	7	104
55	34	55	78	88	58	61	57	62	50	55	68	68	87	65	35	36	11	2	95
49	44	80	103	109	68	79	64	62	59	51	53	61	85	67	71	51	15	5	9
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	1	1	2	3	1	2	1	1	-	3	4	1	4	3	1	-	-	-	1
4	-	2	3	2	-	2	1	1	-	-	1	1	1	-	1	2	-	-	2
-	-	-	1	5	2	-	3	-	-	1	2	3	4	3	1	1	1	-	-
-	-	-	3	3	2	2	2	3	3	-	1	1	1	2	2	2	-	-	-
-	1	-	3	2	1	2	2	-	1	-	3	2	1	1	1	-	1	-	-
-	2	-	3	3	3	2	2	2	-	1	6	3	4	2	5	4	1	1	-
-	-	-	-	-	-	-	1	-	-	-	2	1	1	-	1	-	-	-	-
-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct to Pop.	Persons.	Sex.					
<i>Essex—Con.</i>										
Bradford, .	2,014	{ Ma. 920 Fe. 1,094	1.44	29	10 19	3 4	— —	1 —	— —	— 2
Danvers, .	5,600	{ Ma. 2,751 Fe. 2,849 U. .	1.55	87	42 44 1	14 4 1	4 2 —	— 2 —	1 1 —	1 1 —
Essex, .	1,614	{ Ma. 842 Fe. 772	1.24	20	11 9	1 —	— 1	— —	— —	— 1
Georgetown, .	2,088	{ Ma. 995 Fe. 1,093	.86	18	12 6	1 —	— —	— —	— —	— —
Gloucester, .	15,389	{ Ma. 7,878 Fe. 7,511	2.32	357	233 124	36 25	12 11	2 3	6 3	2 5
Groveland, .	1,776	{ Ma. 838 Fe. 938	1.58	28	12 16	4 3	1 —	— —	— —	— —
Hamilton, .	790	{ Ma. 409 Fe. 381	1.64	13	7 6	— —	— —	— —	— —	— —
Haverhill, .	13,092	{ Ma. 5,383 Fe. 5,685 U. .	1.56	204	103 98 3	19 16 3	6 3 —	3 1 —	1 2 —	1 — —
Ipswich, .	3,720	{ Ma. 1,757 Fe. 1,963	1.83	68	32 36	1 6	2 1	— —	1 —	— —
Lawrence, .	28,921	{ Ma. 12,618 Fe. 16,303	1.72	498	239 259	76 72	23 22	11 11	8 12	13 4
Lynn, .	28,233	{ Ma. 13,472 Fe. 14,761 U. .	1.72	486	236 249 1	80 62 1	15 17 —	1 10 —	2 3 —	2 6 —
Lynnfield, .	818	{ Ma. 396 Fe. 422	1.71	14	8 6	— 2	4 —	— —	— —	— —
Manchester, .	1,665	{ Ma. 783 Fe. 882	.96	16	11 5	2 1	— —	1 —	— —	1 —
Marblehead, .	7,703	{ Ma. 3,845 Fe. 3,858	1.91	147	84 63	21 13	7 6	2 2	— 1	1 1
Methuen, .	2,959	{ Ma. 1,392 Fe. 1,567	1.15	34	16 18	3 3	1 1	— 1	1 —	— —
Middleton, .	1,010	{ Ma. 514 Fe. 496	1.68	17	8 9	2 3	1 —	— 1	— —	— —
Nahant, .	475	{ Ma. 235 Fe. 240	1.26	6	3 3	2 —	— —	— 1	— —	— —
Newbury, .	1,430	{ Ma. 746 Fe. 684	1.82	26	14 12	5 —	— 1	1 —	1 —	— 1
Newburyport, .	12,595	{ Ma. 5,646 Fe. 6,949	1.82	230	109 121	22 12	8 2	4 5	7 2	1 4
North Andover, .	2,549	{ Ma. 1,270 Fe. 1,279	1.88	48	25 23	4 3	2 —	— —	1 —	1 —

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown.
1	1	2	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
1	2	2	2	-	-	1	-	1	-	-	-	-	1	1	-	1	1	-	-
1	1	3	4	-	3	-	2	3	1	1	1	-	-	1	-	1	-	-	-
2	2	-	3	3	1	-	-	2	4	5	-	1	3	1	4	2	1	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	1	1	-	-	1	-	2	-	2	-	-	1	2	-	-	-
-	-	-	-	-	-	1	-	-	-	1	1	1	-	1	1	-	1	-	-
1	-	-	2	1	1	-	-	1	1	-	-	-	2	-	1	1	-	-	-
1	1	-	-	-	1	-	-	1	1	-	1	-	-	-	-	-	-	-	-
7	1	8	2	12	8	5	3	5	2	1	5	7	5	4	5	4	1	-	90
4	2	6	7	12	11	5	4	4	2	1	1	1	3	2	5	5	-	1	1
1	1	-	2	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-
-	-	2	1	-	-	-	-	1	2	-	1	2	1	-	-	1	-	-	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	1	-	1	1	1	-	-	-	-	-	-	-	1	1	-	1	-	-
-	-	-	-	-	-	-	1	1	-	1	-	-	1	-	1	-	1	-	-
3	5	3	11	2	4	7	6	4	3	3	5	4	5	2	2	3	-	1	-
1	2	4	10	14	2	6	5	6	5	2	4	3	5	3	3	1	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	1	2	1	1	1	1	2	2	4	2	2	-	5	2	1	-	-	-
-	-	-	1	1	1	2	2	2	4	2	2	3	4	1	2	1	-	1	-
8	3	4	10	12	9	8	6	10	6	5	7	4	11	4	-	-	1	-	-
5	7	15	15	20	7	12	9	10	8	9	4	7	5	3	2	-	-	-	-
7	7	8	10	15	8	7	9	5	9	8	6	9	11	9	4	4	-	-	-
8	11	12	17	13	11	10	10	6	6	5	4	8	10	5	7	7	1	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-
-	1	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-
1	-	-	1	2	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
-	-	-	-	1	-	-	1	-	-	-	-	-	-	2	-	-	-	-	-
1	2	2	6	9	3	7	1	2	4	3	3	-	2	3	-	1	3	-	1
-	2	1	4	5	2	3	3	3	1	3	2	1	4	1	2	1	2	-	-
-	-	1	1	-	1	-	1	-	-	-	1	2	3	1	-	-	-	-	-
-	1	1	1	-	-	-	-	1	1	1	-	1	1	1	2	1	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-
-	-	4	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	2	1	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-
-	1	1	-	-	-	-	1	-	-	-	-	1	-	3	1	2	-	-	-
8	1	5	-	3	5	2	3	4	4	4	8	5	5	3	2	4	-	-	1
8	4	9	8	7	4	4	6	2	5	2	4	2	9	9	7	4	2	-	-
1	1	-	-	-	-	1	1	1	-	2	-	4	1	2	1	2	-	-	-
-	-	-	1	3	-	4	-	-	1	1	1	2	4	1	2	-	-	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.			DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.		Per ct. to Pop.	Persons.	Sex.					
<i>Essex—Con.</i>											
Peabody, . . .	7,343	{ Ma.	3,732	1.88	101	49	9	6	—	1	—
		{ Fe.	3,611			52	18	5	1	1	—
Rockport, . . .	3,904	{ Ma.	1,980	1.93	76	33	6	2	2	—	—
		{ Fe.	1,924			43	4	1	2	1	—
Rowley, . . .	1,157	{ Ma.	571	2.07	24	13	1	—	—	—	—
		{ Fe.	586			11	1	—	—	—	—
Salem, . . .	24,117	{ Ma.	10,940	2.06	497	239	51	21	6	7	—
		{ Fe.	13,177			257	52	10	4	8	1
		{ U.	.	.	.	1	1	—	—	—	—
Salisbury, . . .	3,776	{ Ma.	1,828	1.80	68	33	9	1	—	—	—
		{ Fe.	1,948			35	8	—	—	1	—
Saugus, . . .	2,247	{ Ma.	1,088	1.38	31	12	3	—	2	—	—
		{ Fe.	1,159			19	4	—	—	—	—
Swampscott, . . .	1,846	{ Ma.	907	1.73	32	12	3	—	—	—	—
		{ Fe.	939			20	—	1	—	—	—
Topsfield, . . .	1,213	{ Ma.	593	1.15	14	5	1	—	—	—	—
		{ Fe.	620			9	—	—	—	—	—
Wenham, . . .	985	{ Ma.	502	2.13	21	9	1	—	—	—	—
		{ Fe.	483			12	2	—	—	—	—
West Newbury, . . .	2,006	{ Ma.	1,029	1.15	23	12	2	1	—	—	1
		{ Fe.	977			11	1	—	—	—	—
FRANKLIN CO., . . .	32,635	{ Tot	32,635	.	.	554	80	34	12	4	5
		{ Ma.	16,362	1.70	554	260	41	13	7	1	2
		{ Fe.	16,273			293	38	21	5	3	3
		{ U.	.	.	.	1	1	—	—	—	—
Ashfield, . . .	1,180	{ Ma.	592	1.10	13	6	—	—	—	—	—
		{ Fe.	588			7	—	1	—	—	—
Bernardston, . . .	961	{ Ma.	472	1.04	10	4	—	—	—	—	—
		{ Fe.	489			6	—	1	—	—	—
Buckland, . . .	1,946	{ Ma.	1,027	1.64	32	18	5	1	—	—	—
		{ Fe.	919			14	1	1	—	—	—
Charlemont, . . .	1,005	{ Ma.	480	1.69	17	9	1	2	—	—	—
		{ Fe.	525			8	1	1	—	—	1
Coleraine, . . .	1,742	{ Ma.	846	1.49	26	11	2	—	—	—	—
		{ Fe.	896			15	1	—	1	—	—
Conway, . . .	1,460	{ Ma.	742	1.85	27	10	1	—	—	—	1
		{ Fe.	718			17	3	1	—	—	—
Deerfield, . . .	3,632	{ Ma.	1,847	1.49	54	23	5	1	1	1	1
		{ Fe.	1,785			31	7	2	1	—	—
Erving, . . .	579	{ Ma.	311	1.72	10	4	—	1	—	—	—
		{ Fe.	268			6	3	—	—	—	—
Gill, . . .	653	{ Ma.	331	1.54	10	5	—	—	—	—	—
		{ Fe.	322			5	—	—	—	—	—

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over	Unknown.
3	1	2	-	2	2	1	2	2	-	2	1	1	5	2	2	2	2	1	1
1	2	3	2	3	3	2	1	2	1	2	1	1	1	1	-	-	1	-	1
2	-	2	3	-	1	1	1	-	2	-	3	2	1	2	2	-	-	-	1
2	-	3	1	1	4	4	2	3	1	3	1	-	2	3	2	3	-	-	1
-	-	1	-	2	1	1	1	-	-	-	-	-	4	2	-	-	-	-	-
-	-	-	-	-	-	-	-	-	1	-	1	2	1	-	-	3	1	-	1
8	4	4	11	10	8	9	13	14	11	12	7	11	16	8	6	6	-	-	1
9	3	8	12	12	13	16	10	9	8	5	9	12	18	13	14	6	1	2	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	2	3	2	1	3	-	-	2	-	-	3	1	4	-	1	-	-	-
-	-	2	4	-	-	-	1	1	3	2	1	3	4	3	1	1	-	-	-
-	-	-	2	1	-	1	-	1	-	1	-	-	1	-	-	-	-	-	-
1	-	3	-	3	-	1	-	-	-	2	1	1	-	1	1	1	-	-	-
-	-	-	-	1	-	1	-	1	-	2	-	1	1	-	1	1	-	-	-
1	-	1	2	1	1	1	1	1	-	1	1	2	-	-	3	2	1	-	-
-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-
1	-	-	-	1	1	-	1	-	1	1	-	-	-	2	-	1	-	-	-
-	1	2	-	-	-	1	-	1	-	-	1	2	-	-	-	-	-	-	-
-	-	-	1	1	-	-	-	-	1	-	2	-	1	2	2	-	-	-	-
-	-	1	1	-	1	-	1	1	1	1	1	1	1	-	-	-	-	-	-
-	-	1	1	-	1	-	1	-	-	-	1	2	-	2	-	-	1	-	-
14	16	24	37	27	24	15	17	15	23	15	23	32	39	29	32	25	6	2	4
10	8	15	19	10	11	8	8	11	15	7	13	7	14	10	14	12	2	-	2
4	8	9	18	17	13	7	9	4	8	8	10	25	25	19	18	13	4	2	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	1	-	-	-	-	-	1	-	-	-	-	-	1	-	1	1	-	-
-	-	1	2	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	-
-	-	-	1	1	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-
-	-	-	1	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
2	2	3	-	-	1	-	-	-	-	-	3	-	-	-	-	1	-	-	-
-	-	1	-	2	1	2	-	-	2	1	-	1	1	-	1	-	-	-	-
1	-	1	1	-	-	-	-	1	1	-	-	-	-	-	1	-	-	-	-
-	1	1	-	1	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-
-	1	-	1	2	1	-	-	1	1	-	2	1	1	1	1	1	-	-	-
-	-	1	-	-	-	-	-	-	-	-	1	1	-	-	2	1	-	-	-
-	-	1	-	1	1	-	1	-	-	2	1	1	2	2	3	-	-	-	-
1	1	-	2	1	-	2	-	-	3	-	1	1	1	-	-	1	-	-	-
-	1	1	1	-	1	-	2	1	1	-	1	4	2	3	2	1	-	-	-
-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-
-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
-	-	-	-	-	-	-	-	-	1	-	-	-	1	1	-	1	1	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.			DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.		Per ct. to Pop.	Persons.	Sex.					
<i>Franklin—Con.</i>											
Greenfield, .	8,589	{ Ma. Fe.	1,740 1,849	2.09	75	40 85	9 7	4 4	1 2	— 1	— 1
Hawley, .	672	{ Ma. Fe.	358 314	1.78	12	6 6	2 1	— 1	— —	— 1	— 1
Heath, .	613	{ Ma. Fe. U.	302 311 .	.49	3	— 2 1	— — 1	— — —	— — —	— — —	— — —
Leverett, .	877	{ Ma. Fe.	437 440	1.03	9	5 4	— —	— —	— —	— —	— —
Leyden, .	518	{ Ma. Fe.	265 253	1.16	6	5 1	1 —	1 —	— —	— —	— —
Monroe, .	201	{ Ma. Fe.	115 86	2.00	4	1 3	— 1	— —	— —	— —	— —
Montague, .	2,224	{ Ma. Fe.	1,161 1,063	2.65	59	27 32	3 4	— 5	1 1	— —	— —
New Salem, .	987	{ Ma. Fe.	474 513	.81	8	4 4	— —	— —	— —	— —	— —
Northfield, .	1,720	{ Ma. Fe.	822 898	1.28	22	11 11	2 —	— —	— —	— —	— —
Orange, .	2,091	{ Ma. Fe.	1,029 1,062	1.86	39	18 21	4 2	2 2	1 —	— —	— —
Rowe, .	581	{ Ma. Fe.	299 282	1.38	8	1 7	— —	— —	— —	— —	— —
Shelburne, .	1,582	{ Ma. Fe.	767 815	1.77	28	10 18	1 1	1 1	1 —	— —	— —
Shutesbury, .	614	{ Ma. Fe.	292 322	1.63	10	8 2	— —	— —	— —	— —	— —
Sunderland, .	832	{ Ma. Fe.	413 419	2.04	17	5 12	1 2	— —	— —	— —	— —
Warwick, .	769	{ Ma. Fe.	389 380	1.82	14	6 8	2 —	— —	— —	— —	— —
Wendell, .	539	{ Ma. Fe.	280 259	2.41	13	6 7	— 2	— 1	— —	— —	— —
Whately, .	1,068	{ Ma. Fe.	571 497	2.62	28	17 11	2 2	— —	2 —	— 1	— —
HAMPDEN Co., .	78,409	{ Tot. Ma. Fe.	78,409 37,382 41,027	. 1.91	. 1,499	1,499 757 742	328 188 140	109 49 60	58 28 30	32 12 20	23 9 14
Agawam, .	2,001	{ Ma. Fe.	965 1,036	1.15	23	12 11	3 2	— —	— 1	— —	— —

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown.
1	-	2	3	-	5	2	3	3	3	-	1	1	-	1	-	1	-	-	-
1	-	-	5	3	2	1	1	1	-	1	1	-	2	-	1	-	-	1	-
-	-	-	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
-	-	-	-	1	-	-	-	-	1	-	-	-	1	1	1	-	-	-	-
-	-	-	-	-	-	-	-	-	-	1	-	3	-	-	-	-	-	-	-
-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	6	2	-	1	1	-	3	1	1	1	2	-	2	-	1	-	1
2	2	1	2	-	3	1	-	-	1	1	-	2	-	3	1	2	1	-	1
-	2	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-
-	-	-	-	-	1	-	-	-	-	1	-	1	1	-	-	-	-	-	-
1	-	1	-	-	-	-	1	-	1	1	-	-	1	1	1	1	-	-	-
-	1	-	1	-	-	-	-	-	-	-	-	1	4	1	2	1	-	-	-
-	-	-	1	-	-	2	-	-	1	-	3	-	-	2	-	2	-	-	-
-	1	-	2	3	-	1	1	1	1	-	-	2	2	1	1	1	-	-	-
1	-	-	1	-	-	-	1	-	-	-	-	1	-	1	1	1	1	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
-	-	-	1	1	2	2	2	-	-	-	1	-	4	2	1	1	-	-	-
1	-	1	-	-	1	-	-	-	-	1	-	-	2	1	-	1	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
-	1	2	-	1	1	-	-	-	-	-	1	-	-	-	3	-	1	-	-
1	-	-	-	-	-	-	-	-	-	1	-	-	1	-	1	-	-	-	-
-	-	-	1	-	-	-	1	-	-	-	1	-	1	1	3	-	-	-	-
1	-	1	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	1
-	-	-	1	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-
-	-	-	1	2	1	1	-	2	-	-	1	-	2	1	2	-	-	-	-
-	-	-	1	-	1	-	-	-	-	-	1	1	-	2	-	2	-	-	-
57	40	61	101	75	58	63	60	49	50	53	47	49	45	58	33	29	8	7	6
35	29	29	53	30	26	28	30	24	31	23	23	26	21	24	18	15	-	5	1
22	11	32	48	45	32	35	30	25	19	30	24	23	24	34	15	14	8	2	5
-	-	1	3	-	1	-	-	-	-	-	-	1	1	-	-	1	-	1	-
-	1	-	-	1	-	-	-	-	-	2	-	-	-	2	2	-	-	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.			DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.		Per ct. to Pop.	Persons.	Sex.					
<i>Hampden—Con.</i>											
Blandford, . .	1,026	{ Ma.	501	1.56	16	7	2	—	—	—	—
		{ Fe.	525			9	2	—	—	—	—
Brimfield, . .	1,288	{ Ma.	639	2.17	28	13	—	2	—	1	—
		{ Fe.	649			15	1	—	—	—	—
Chester, . .	1,253	{ Ma.	641	.80	10	4	—	—	—	—	—
		{ Fe.	612			6	—	1	—	—	—
Chicopee, . .	9,607	{ Ma.	4,284	1.84	177	91	20	5	5	1	1
		{ Fe.	5,323			86	16	5	4	1	2
Granville, . .	1,293	{ Ma.	656	1.23	16	8	—	—	—	—	—
		{ Fe.	637			8	1	—	—	—	—
Holland, . .	344	{ Ma.	173	2.04	7	4	—	—	—	—	—
		{ Fe.	166			3	1	—	—	—	—
Holyoke, . .	10,733	{ Ma.	4,856	2.72	292	139	47	15	8	8	4
		{ Fe.	5,877			153	36	19	8	8	7
Longmeadow, .	1,342	{ Ma.	632	2.01	27	12	5	—	—	—	—
		{ Fe.	710			15	2	1	1	—	—
Ludlow, . .	1,136	{ Ma.	560	1.06	12	6	1	—	—	—	—
		{ Fe.	576			6	—	—	—	—	—
Monson, . .	3,204	{ Ma.	1,632	1.53	49	29	6	—	2	—	—
		{ Fe.	1,572			20	4	—	2	—	—
State Almshouse at Monson, .	—	{ Ma.	—	—	36	20	3	1	1	1	1
		{ Fe.	—			16	5	4	1	—	1
Montgomery, .	318	{ Ma.	172	2.92	9	6	1	—	—	—	—
		{ Fe.	146			3	1	—	—	—	—
Palmer, . .	3,631	{ Ma.	1,702	2.12	77	42	5	1	1	1	—
		{ Fe.	1,929			35	7	2	3	2	1
Russell, . .	635	{ Ma.	305	2.20	14	5	—	—	1	—	—
		{ Fe.	330			9	2	2	—	—	—
Southwick, .	1,100	{ Ma.	562	.91	10	5	—	—	—	—	—
		{ Fe.	538			5	3	—	—	—	—
Springfield, .	26,703	{ Ma.	12,894	1.85	494	252	73	22	7	5	3
		{ Fe.	13,809			242	46	20	10	6	3
Tolland, . .	509	{ Ma.	282	.80	4	2	—	—	—	—	—
		{ Fe.	227			2	—	—	—	—	—
Wales, . .	831	{ Ma.	411	.72	6	3	1	—	—	—	—
		{ Fe.	420			3	—	—	—	—	—
Westfield, . .	6,519	{ Ma.	3,125	2.07	135	64	14	1	2	—	—
		{ Fe.	3,394			71	11	5	—	2	—
W. Springfield, .	2,606	{ Ma.	1,229	1.33	36	22	4	2	1	—	—
		{ Fe.	1,377			14	—	1	—	1	—
Wilbraham, .	2,330	{ Ma.	1,156	.90	21	11	3	—	—	—	—
		{ Fe.	1,174			10	—	—	—	—	—

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown
-	-	-	-	1	-	-	-	-	-	-	1	-	-	3	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	2	2	1	1	-	1	-	-	-
-	1	-	1	-	-	1	2	2	-	1	1	3	1	1	1	-	-	1	-
-	1	-	-	-	9	1	-	-	-	-	1	-	1	1	1	1	-	-	-
1	-	1	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
-	-	-	-	2	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-
6	2	4	5	3	6	2	5	3	7	-	3	4	1	4	1	1	-	2	-
1	-	8	6	8	6	4	1	3	4	4	4	3	1	2	2	-	1	-	-
-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	2	3	-	1	-
-	-	1	-	-	1	-	-	-	2	1	-	-	-	-	-	-	1	-	1
-	1	-	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-
7	7	4	9	6	3	3	6	4	3	2	2	-	1	3	1	-	-	1	-
8	1	5	14	9	7	6	5	3	2	6	3	1	2	2	-	-	1	-	-
-	-	-	1	-	-	-	-	-	1	-	1	3	-	-	-	-	-	-	-
-	-	1	-	-	1	-	1	-	-	2	2	-	-	2	-	2	-	-	-
-	-	-	-	1	1	-	-	-	2	1	-	-	-	-	-	-	1	-	-
-	-	-	-	-	-	-	-	-	1	-	1	1	2	-	-	-	-	-	-
4	1	1	3	-	1	-	-	1	-	-	2	1	2	2	1	2	-	-	-
-	-	2	2	-	-	-	-	1	-	-	3	1	-	1	1	1	1	-	1
4	2	-	-	1	-	1	-	1	3	-	-	-	1	-	-	-	-	-	-
3	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	1	-	-	-	-	-	1	1	-	1	-	-	-	-
-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
-	3	2	7	4	-	1	3	1	3	-	-	3	-	3	1	3	-	-	-
-	-	2	1	1	-	4	3	3	-	1	1	1	1	1	-	-	-	-	1
-	-	-	-	1	-	1	-	-	1	-	-	-	-	-	-	1	-	-	-
-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1	1	-	-	1
-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-
-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-
10	7	12	14	8	10	16	10	6	7	9	9	6	9	3	5	-	-	-	1
8	6	9	16	16	10	15	13	8	6	5	5	10	10	11	1	5	2	1	-
-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-
-	-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-	-
3	3	2	5	3	4	2	3	4	3	4	2	3	1	2	2	1	-	-	-
2	1	2	3	6	4	3	3	3	4	5	1	2	1	5	4	3	-	-	1
-	1	1	1	-	-	1	1	3	1	2	-	1	2	-	-	1	-	-	-
-	-	-	5	1	1	-	-	-	-	-	-	1	3	1	-	-	-	-	-
-	-	1	1	-	-	-	2	-	-	1	1	-	1	-	1	-	-	-	-
-	-	1	-	-	-	-	1	-	-	1	1	1	1	2	1	-	1	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to 1'op.	Persons.	Sex.					
HAMPSHIRE CO.,	44,388	{ Tot. 44,388 Ma. 21,443 Fe. 22,945 U. .	. 1.71 . .	. 760 . .	760 366 393 1	135 67 67 1	46 24 22 —	23 10 13 —	11 5 6 —	3 — 3 —
Amherst, .	4,035	{ Ma. 2,042 Fe. 1,993	1.88	76	34 42	7 9	2 1	1 1	1 —	— —
Belchertown, .	2,428	{ Ma. 1,215 Fe. 1,213	.92	24	10 14	2 1	— —	— —	— —	— —
Chesterfield, .	811	{ Ma. 401 Fe. 410	1.72	14	7 7	2 2	— —	— —	— —	— —
Cummington, .	1,037	{ Ma. 504 Fe. 533	2.60	27	13 14	1 1	— 1	1 1	— —	— —
Easthampton, .	3,620	{ Ma. 1,640 Fe. 1,980	1.63	59	24 35	5 9	1 6	— 1	— 1	— —
Enfield, .	1,023	{ Ma. 499 Fe. 524	1.86	19	7 12	1 2	— 1	— 2	— —	— —
Goshen, .	368	{ Ma. 190 Fe. 178	1.90	7	5 2	1 —	— —	— —	— —	— —
Granby, .	863	{ Ma. 432 Fe. 431	1.74	15	6 9	1 1	1 —	— —	— —	— —
Greenwich, .	665	{ Ma. 319 Fe. 346	1.96	13	8 5	1 —	— 1	— —	— —	— —
Hadley, .	2,301	{ Ma. 1,201 Fe. 1,100	1.91	44	17 27	2 3	1 2	— —	1 1	— —
Hatfield, .	1,594	{ Ma. 811 Fe. 783	2.45	39	20 19	4 1	3 —	2 3	1 —	— —
Huntington, .	1,156	{ Ma. 549 Fe. 607	2.51	29	15 14	4 1	2 —	— —	— —	— 1
Middlefield, .	728	{ Ma. 376 Fe. 352 U. .	1.79 . .	13 . .	8 4 1	2 1 1	— 1 —	1 — —	— — —	— — —
Northampton, .	10,160	{ Ma. 4,860 Fe. 5,300	1.59	162	90 72	18 14	5 2	2 2	— 1	— —
Pelham, .	673	{ Ma. 322 Fe. 351	1.78	12	4 8	— 1	— —	— —	— —	— —
Plainfield, .	521	{ Ma. 259 Fe. 262	1.54	8	4 4	— —	1 —	— —	— —	— —
Prescott, .	541	{ Ma. 265 Fe. 276	.93	5	— 5	— 1	— —	— —	— —	— —
South Hadley, .	2,840	{ Ma. 1,218 Fe. 1,622	1.87	53	20 33	5 9	1 1	2 1	— 2	— —
Southampton, .	1,159	{ Ma. 590 Fe. 569	1.90	22	11 11	— 2	1 —	— —	— —	— —

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown.
36	14	37	35	32	30	27	32	24	27	30	37	33	44	36	37	23	4	1	3
17	11	22	12	12	15	10	12	15	16	14	17	17	24	20	17	7	-	-	-
19	3	15	23	20	15	17	20	9	11	16	20	16	20	16	20	16	4	1	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1	2	1	1	1	-	1	2	2	1	2	2	-	2	1	-	-	-	-
1	-	3	3	1	3	3	1	1	3	1	2	1	2	3	2	-	1	-	-
1	-	1	-	1	1	-	-	-	-	2	1	-	1	-	-	-	-	-	-
2	-	-	3	1	-	1	1	1	-	-	1	-	-	1	-	2	-	-	-
-	-	1	-	-	-	-	-	-	-	-	-	2	-	1	1	-	-	-	-
-	-	-	-	-	1	-	-	-	-	-	1	-	2	-	1	-	-	-	-
1	1	1	-	-	1	1	-	-	-	-	-	1	1	2	1	1	-	-	-
-	1	1	-	1	1	-	-	-	-	-	-	2	2	1	1	-	1	-	-
2	-	2	-	1	-	-	1	1	1	2	2	1	3	-	1	-	-	-	1
2	1	3	2	-	2	2	2	1	-	-	2	-	-	-	-	1	-	-	-
-	-	-	-	-	1	-	-	-	2	-	1	1	-	1	-	-	-	-	-
-	-	-	-	-	-	1	-	-	-	-	1	1	1	1	1	1	-	-	-
-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1
-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-
-	-	1	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
1	-	1	1	1	-	-	-	2	-	-	-	1	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-
-	1	-	-	-	-	1	-	1	1	1	1	-	2	3	-	-	-	-	-
3	-	-	-	2	1	-	2	-	-	2	2	1	2	2	3	1	-	-	-
3	1	-	1	-	-	1	1	1	1	-	-	-	2	-	-	2	-	-	-
1	-	-	-	-	1	1	-	1	-	1	-	1	1	-	2	1	1	-	-
-	-	1	-	-	-	-	-	-	3	2	3	-	-	-	1	1	-	-	1
1	-	-	1	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-
1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	2	6	4	3	6	4	6	5	5	2	5	1	6	4	2	1	-	-	-
4	-	1	4	7	4	3	9	3	1	3	2	3	2	3	2	2	-	-	-
-	-	1	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
-	-	-	1	2	-	1	-	1	-	1	-	-	1	-	-	-	-	-	-
-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	2	1	-	-	-
-	-	-	-	-	-	-	1	-	-	-	1	-	1	-	1	-	-	-	-
-	-	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	3	2	2	-	1	1	-	5	3	1	1	-	1	1	-	1	-
-	-	-	-	-	-	1	-	-	-	-	-	1	2	2	2	-	-	-	-
1	-	-	2	-	-	1	-	-	-	1	2	1	-	-	1	-	1	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons.	Sex.					
<i>Hampshire—Con.</i>										
Ware, . . .	4,259	{ Ma. 2,006 Fe. 2,253	1.53	65	36 29	8 2	2 3	1 2	1 —	— 2
Westhampton, .	587	{ Ma. 281 Fe. 306	1.87	11	3 8	— 2	— —	— —	— —	— —
Williamsburg, .	2,159	{ Ma. 1,041 Fe. 1,118	1.11	24	11 13	2 5	2 3	— —	— —	— —
Worthington, .	860	{ Ma. 422 Fe. 438	2.21	19	13 6	1 —	2 —	— —	1 1	— —
MIDDLESEX CO.,	274,353	{ Tot. 274,353 Ma. 131,959 Fe. 142,394 U. .	. 1.88 . .	. 5,169 . .	5,169 2,499 2,667 3	1225 688 535 2	381 176 205 —	170 88 81 1	81 37 44 —	76 41 35 —
Acton, . . .	1,593	{ Ma. 783 Fe. 810	1.13	18	11 7	1 —	1 1	— —	— —	— —
Arlington, . .	3,261	{ Ma. 1,571 Fe. 1,690	1.69	55	30 25	9 7	2 8	— —	1 —	— —
Ashby, . . .	994	{ Ma. 468 Fe. 526	2.21	22	7 15	1 1	— —	— —	— 1	— —
Ashland, . . .	2,186	{ Ma. 1,136 Fe. 1,050	1.65	36	18 18	5 4	1 —	— —	1 —	— —
Bedford, . . .	849	{ Ma. 421 Fe. 428	1.53	13	8 5	1 —	— —	— —	1 —	— —
Belmont, . . .	1,513	{ Ma. 757 Fe. 756	1.59	24	10 14	4 4	— —	— —	— —	3 —
Billerica, . .	1,833	{ Ma. 875 Fe. 958	1.64	30	15 15	3 2	— 1	2 —	— —	— —
Boxborough, .	338	{ Ma. 182 Fe. 156	1.18	4	2 2	— —	— —	— —	— —	— —
Brighton, . .	4,967	{ Ma. 2,631 Fe. 2,336	1.77	88	45 43	13 5	3 2	2 1	— —	2 1
Burlington, .	626	{ Ma. 324 Fe. 302	1.12	7	4 3	— —	— —	— 1	— —	— —
Cambridge, . .	39,634	{ Ma. 19,356 Fe. 20,278	2.04	811	418 393	139 97	42 39	15 13	1 5	6 5
Carlisle, . . .	569	{ Ma. 287 Fe. 282	.88	5	4 1	2 —	— —	— —	— —	— —
Charlestown, .	28,323	{ Ma. 13,931 Fe. 14,392 U. .	2.09 . .	594 . .	308 285 1	95 58 —	24 16 —	14 9 1	3 5 —	7 9 —
Chelmsford, .	2,374	{ Ma. 1,170 Fe. 1,204	2.11	50	18 32	4 2	2 1	— 2	1 1	— —

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown.
1	2	1	2	1	1	1	-	2	1	2	1	2	4	2	1	-	-	-	-
-	-	2	-	2	2	1	2	-	1	2	-	2	1	1	2	2	-	-	-
-	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-
-	-	1	-	-	-	-	-	-	-	-	-	-	3	2	-	-	-	-	-
-	-	-	2	-	1	-	1	1	-	-	-	1	-	-	1	-	-	-	-
-	1	-	1	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
2	2	-	-	-	-	-	-	-	1	1	1	-	-	2	-	-	-	-	-
-	-	-	1	-	-	1	-	-	-	-	-	-	-	1	-	2	-	-	-
167	110	198	270	255	207	242	197	179	164	168	216	192	196	185	145	76	31	16	22
69	44	77	108	103	92	105	97	87	85	92	115	101	97	85	59	24	14	4	11
98	66	121	162	152	115	137	100	92	79	76	101	91	99	100	86	52	17	12	11
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	2	-	-	-	-	-	-	-	1	2	1	2	1	-	-	-	-	-
-	-	-	1	3	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-
1	1	-	1	1	1	1	2	1	1	2	1	2	1	1	1	-	-	-	-
2	-	2	1	-	1	3	1	1	1	-	-	1	1	1	-	-	-	-	-
-	-	1	-	-	-	-	-	-	-	1	-	-	1	1	1	-	1	-	-
-	1	-	-	1	1	1	1	3	1	3	-	-	-	-	-	-	1	-	-
-	1	1	-	2	-	-	1	2	-	-	-	1	2	1	-	-	-	-	-
2	2	1	1	3	1	-	-	-	1	1	-	-	-	2	-	-	-	-	-
-	-	-	1	-	1	-	-	-	-	-	2	1	1	-	-	-	-	-	-
-	-	2	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
-	-	-	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
-	-	1	3	2	-	1	1	1	-	-	-	-	-	1	-	-	-	-	-
-	1	-	1	-	-	-	-	-	2	1	2	-	2	1	-	-	-	-	-
-	-	2	1	-	1	1	-	-	-	-	1	1	4	-	-	1	-	-	-
-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
3	-	1	1	1	-	3	1	1	3	3	2	1	2	-	1	-	1	-	1
1	1	2	4	4	4	5	2	2	1	1	3	-	1	-	1	2	-	-	-
-	-	-	-	-	-	-	-	-	1	1	-	-	1	1	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-
15	7	8	13	18	13	18	17	10	18	18	15	14	13	7	8	2	-	-	1
20	7	15	18	25	19	19	12	11	15	8	13	11	10	10	14	1	2	3	1
-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
7	6	9	12	18	18	17	15	10	11	9	7	4	6	6	5	-	-	2	3
8	9	11	15	19	17	14	10	12	8	12	7	8	9	8	13	5	1	-	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	1	-	4	-	1	1	2	-	-	-	-	1	1	-	-	-	-	-
1	2	2	4	1	2	2	1	-	-	2	2	2	2	1	1	1	-	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct to Pop.	Persons.	Sex.					
<i>Middlesex—Con.</i>										
Concord, . .	2,412	{ Ma. 1,190 Fe. 1,222	1.57	38	17 21	5 4	2 2	— —	— 1	— 1
Dracut, . .	2,078	{ Ma. 1,050 Fe. 1,028	1.49	31	14 17	5 2	1 —	1 1	— —	— —
Dunstable, .	471	{ Ma. 244 Fe. 227	1.06	5	2 3	— —	— —	— —	— —	— —
Everett, . .	2,220	{ Ma. 1,087 Fe. 1,133 U. .	1.31	29	12 16 1	3 5 1	1 1 —	— — —	1 1 —	— — —
Framingham, .	4,968	{ Ma. 2,297 Fe. 2,671	1.69	84	42 42	3 3	2 —	1 —	1 2	— —
Groton, . .	3,584	{ Ma. 1,723 Fe. 1,861	1.93	69	33 36	11 4	2 3	2 1	— 1	1 1
Holliston, . .	3,073	{ Ma. 1,535 Fe. 1,538	1.29	49	30 19	5 5	2 1	2 —	— —	— —
Hopkinton, .	4,419	{ Ma. 2,236 Fe. 2,183	1.04	46	21 25	5 3	— 1	— 1	— —	2 —
Hudson, . .	3,389	{ Ma. 1,661 Fe. 1,728	1.86	63	24 39	5 9	1 4	1 2	2 —	1 —
Lexington, .	2,277	{ Ma. 1,123 Fe. 1,154	1.67	38	11 27	— 4	— 1	— —	— —	— —
Lincoln, . .	791	{ Ma. 392 Fe. 399	1.52	12	7 5	2 —	1 —	— —	— —	— —
Littleton, . .	983	{ Ma. 502 Fe. 481	1.02	10	1 9	— 1	— —	— 1	— —	— —
Lowell, . .	40,928	{ Ma. 17,494 Fe. 23,434	2.32	952	441 511	124 111	41 54	23 24	11 12	8 8
Malden, . .	7,367	{ Ma. 3,530 Fe. 3,837	1.59	117	60 57	13 12	5 2	5 3	2 1	— 1
Marlborough, .	8,474	{ Ma. 4,325 Fe. 4,149	1.98	168	78 90	34 23	6 20	3 2	1 4	— —
Medford, . .	5,717	{ Ma. 2,906 Fe. 2,811	1.50	86	38 48	10 7	1 3	— —	1 —	2 —
Melrose, . .	3,414	{ Ma. 1,589 Fe. 1,825	1.38	47	17 30	— 3	2 1	— —	— —	— —
Natick, . .	6,404	{ Ma. 3,208 Fe. 3,196	1.66	106	53 53	14 9	3 1	1 2	— 3	— 1
Newton, . .	12,825	{ Ma. 5,973 Fe. 6,852	1.01	130	62 68	13 10	3 5	1 1	1 —	— —
North Reading, .	942	{ Ma. 462 Fe. 480	1.81	17	7 10	1 —	— —	— —	— —	— —

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95.	95 & over.	Unknown.
-	-	2	-	-	-	-	-	1	2	1	1	1	1	-	-	1	-	-	-
-	1	1	1	-	-	2	-	-	-	1	-	-	2	1	4	-	-	-	-
2	1	1	1	-	1	1	2	1	1	1	1	-	-	1	1	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-
1	-	1	1	1	1	1	-	-	-	1	-	2	1	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	1	1	2	-	2	-	1	3	5	2	1	2	4	4	2	2	1	-	1
-	1	-	3	6	-	6	2	1	1	2	2	2	2	6	1	2	-	-	-
-	2	2	-	2	2	1	-	1	-	2	3	-	-	1	-	-	-	-	1
1	4	-	4	-	-	1	1	1	1	-	3	1	2	3	4	-	-	-	-
1	1	3	2	-	-	-	2	1	-	-	3	3	2	1	1	1	-	-	-
-	-	1	1	2	1	-	-	-	1	-	-	1	-	1	2	1	-	1	1
2	-	-	-	1	-	1	1	1	1	-	1	1	-	1	3	-	1	-	-
2	-	-	1	1	2	4	-	1	-	3	-	1	1	1	2	-	-	1	-
2	1	2	4	1	3	-	4	-	-	-	1	1	2	1	-	2	-	-	-
-	-	-	1	1	-	-	-	-	-	-	3	2	1	1	1	1	-	-	-
-	3	2	1	-	-	-	1	-	4	-	2	1	5	-	1	1	-	1	-
1	-	1	-	-	-	-	-	-	-	-	1	-	-	1	1	-	1	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
-	-	1	-	1	1	1	-	-	-	-	-	1	2	-	-	-	-	-	-
15	8	13	19	19	15	14	18	19	11	15	21	13	12	10	6	2	2	-	2
23	10	23	42	29	24	23	14	13	10	12	18	17	11	10	9	7	4	1	2
1	2	1	2	3	-	4	5	1	1	3	3	3	4	1	1	-	-	-	-
4	3	1	4	4	3	3	3	3	4	-	-	2	1	2	-	-	-	-	1
2	-	4	3	4	3	4	2	1	1	2	2	2	1	3	-	-	-	-	-
3	1	6	4	3	1	4	2	-	2	2	2	4	2	3	1	1	-	-	-
1	-	1	4	3	2	-	-	1	-	-	4	2	3	2	1	-	-	-	-
1	3	5	3	2	1	4	3	2	2	1	-	-	5	4	2	-	-	-	-
1	1	-	-	1	-	2	1	1	1	-	1	3	1	-	2	-	-	-	-
1	2	-	5	4	1	1	1	1	1	2	2	1	1	2	-	1	-	-	-
1	1	5	4	3	5	2	1	1	1	-	1	3	4	2	-	-	1	-	-
3	4	5	3	1	2	2	1	4	1	2	2	4	1	1	-	1	-	-	-
-	2	-	5	2	2	1	3	4	1	5	4	5	4	2	3	1	-	-	-
2	2	2	2	4	1	1	6	4	4	-	4	3	5	3	3	4	-	2	-
-	-	-	-	-	1	1	-	1	-	-	-	-	-	1	-	1	-	1	-
-	-	1	1	2	1	-	-	-	1	-	-	-	1	1	-	1	-	-	1

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons.	Sex.					
<i>Middlesex</i> —Con.										
Pepperell, . .	1,842	{ Ma. 889 Fe. 953	1.52	28	10 18	3 3	— 2	— —	— —	— —
Reading, . .	2,664	{ Ma. 1,233 Fe. 1,431	1.85	36	21 15	2 2	— —	— —	— —	— —
Sherborn, . .	1,062	{ Ma. 508 Fe. 554	1.60	17	5 12	— —	— 1	— —	— —	— —
Shirley, . .	1,451	{ Ma. 726 Fe. 725	2.27	33	14 19	7 2	1 2	— 1	1 —	1 —
Somerville, . .	14,685	{ Ma. 7,295 Fe. 7,390	1.76	258	132 126	51 44	10 11	3 2	1 1	1 2
Stoneham, . .	4,513	{ Ma. 2,205 Fe. 2,308	1.40	63	28 35	10 6	1 1	1 —	1 —	1 —
Stow, . .	1,813	{ Ma. 888 Fe. 925	1.60	29	15 14	3 3	— 1	— —	1 —	— —
Sudbury, . .	2,091	{ Ma. 1,035 Fe. 1,056	1.24	26	12 14	1 2	— 2	— —	1 1	— —
Tewksbury, . .	1,944	{ Ma. 926 Fe. 1,018	.51	10	4 6	1 —	— 1	— 1	— —	— —
State Almshouse at Tewksbury,	—	{ Ma. — Fe. —	—	246	132 114	23 24	1 3	2 2	— —	2 —
Townsend, . .	1,962	{ Ma. 989 Fe. 973	1.53	30	14 16	4 1	— 2	1 —	— 2	— —
Tyngsborough, .	629	{ Ma. 329 Fe. 300	1.59	10	5 5	1 —	— —	— —	— —	— —
Wakefield, . .	4,135	{ Ma. 1,994 Fe. 2,141	1.62	67	34 33	7 4	1 2	2 1	1 —	— —
Waltham, . .	9,065	{ Ma. 4,259 Fe. 4,806	1.49	135	60 75	15 18	5 8	3 5	1 2	2 2
Watertown, . .	4,326	{ Ma. 2,081 Fe. 2,245 U. .	1.55	67	31 35 1	10 10 1	3 1 —	— 1 —	— — —	— 1 —
Wayland, . .	1,240	{ Ma. 624 Fe. 616	1.86	23	11 12	2 1	1 1	1 1	— —	— —
Westford, . .	1,803	{ Ma. 900 Fe. 903	1.72	31	15 16	— —	1 1	— 1	— —	— —
Weston, . .	1,261	{ Ma. 633 Fe. 628	.79	10	5 5	— —	— —	— —	— —	— —
Wilmington, . .	866	{ Ma. 428 Fe. 438	2.77	24	11 13	2 1	— —	1 —	— —	— —
Winchester, . .	2,645	{ Ma. 1,289 Fe. 1,356	.98	26	12 14	3 1	1 —	— —	1 —	— —
Woburn, . .	8,560	{ Ma. 4,809 Fe. 4,251	1.71	146	60 86	18 18	3 4	1 2	1 1	2 3

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40													
-	-	1	1	-	-	-													
-	-	1	1	-	4	3	-	-	1	-	1	2	-	1	2	2	1	-	-
-	1	1	-	-	3	-	1	-	-	1	1	1	-	-	2	1	-	-	-
-	-	1	1	-	-	-	-	-	-	-	-	-	1	1	1	1	2	1	1
1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-
2	2	2	1	-	-	2	-	-	-	-	-	2	-	-	-	1	-	1	-
3	2	2	6	3	3	7	6	3	3	4	6	3	5	3	1	-	-	-	1
1	1	3	6	4	9	3	2	7	4	2	3	6	-	9	1	2	2	1	-
1	1	-	1	1	1	1	-	-	-	1	2	2	2	-	-	1	-	-	-
1	-	-	2	6	1	4	1	3	-	2	1	3	2	1	2	-	-	-	-
1	-	-	1	-	1	1	-	1	-	1	-	1	1	1	2	-	2	-	-
1	-	1	1	-	2	-	-	-	-	-	1	1	1	1	-	-	-	-	-
-	1	-	1	1	-	-	-	1	-	-	-	1	2	2	-	1	-	-	-
-	-	1	1	-	-	1	-	-	-	-	4	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	1	-	-	-	-
-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
2	1	6	7	7	6	11	8	8	4	6	7	9	7	7	3	3	1	1	-
1	-	5	6	10	4	5	5	5	6	7	8	5	6	6	6	1	-	-	-
-	-	1	-	-	-	-	-	-	2	-	4	1	-	1	-	-	-	-	-
-	-	-	1	1	-	2	-	1	1	-	2	-	2	-	1	-	-	-	-
1	-	-	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
-	-	-	-	1	-	-	-	-	-	1	1	-	-	-	2	-	1	-	-
1	1	2	4	1	2	-	-	1	1	1	-	4	-	2	1	2	1	-	-
1	1	2	3	2	2	1	-	1	1	3	-	-	4	2	1	1	-	-	-
-	2	2	2	1	-	3	4	3	3	1	3	3	1	4	2	1	-	-	-
2	1	4	3	2	1	5	3	4	5	2	3	3	3	2	-	1	-	-	-
3	1	2	-	-	3	-	-	1	-	-	3	2	1	2	-	1	-	-	-
2	-	2	-	1	2	-	3	2	-	1	1	1	1	1	1	2	1	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	1	1	-	-	-	1	-	-	-	-	1	-	1	2	-	-	-	-
-	-	1	1	-	-	-	1	-	-	-	2	-	1	-	1	-	-	-	-
-	-	-	1	-	-	-	-	-	-	1	1	2	2	1	-	-	2	-	-
-	-	1	1	-	-	3	-	-	-	-	1	1	1	1	-	2	1	-	1
-	1	1	-	-	-	1	-	-	-	-	1	-	-	-	1	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	1	-	-	1	1	2	-	1	-	1	1	2	1	-	1	-	-
1	-	1	-	1	-	2	1	3	1	-	-	-	-	-	-	-	-	-	-
1	-	-	1	2	1	2	2	-	-	-	2	-	-	-	-	-	1	-	-
2	3	3	6	1	4	3	1	2	-	4	2	2	5	1	2	-	-	-	1
3	-	3	4	4	1	7	7	-	4	2	2	2	4	4	3	6	1	-	1

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons.	Sex.					
NANTUCKET Co.,	4,123	{ Tot. 4,123 Ma. 1,825 Fe. 2,298	. 2.26	. 93	93 49 44	4 4 —	2 1 1	3 — 3	1 1 —	1 1 —
NORFOLK Co.,	89,443	{ Tot. 89,443 Ma. 42,944 Fe. 46,499 U. .	. 1.56 .	. 1,399 .	1,399 684 712 3	292 161 128 3	74 42 32 —	39 19 20 —	29 14 15 —	15 10 5 —
Bellingham, .	1,282	{ Ma. 631 Fe. 651	1.40	18	8 10	— 3	— 1	— —	— —	— —
Braintree, .	3,948	{ Ma. 1,941 Fe. 2,007	1.72	68	33 35	7 5	— 2	— 3	— —	— —
Brookline, .	6,650	{ Ma. 2,984 Fe. 3,666	1.46	97	45 52	13 19	3 2	3 —	1 —	— —
Canton, .	3,879	{ Ma. 1,833 Fe. 2,046 U. .	2.12 .	82 .	34 47 1	10 7 1	4 1 —	2 3 —	1 2 —	2 — —
Cohasset, .	2,130	{ Ma. 1,008 Fe. 1,122	1.27	27	12 15	2 2	2 —	— —	1 —	— 1
Dedham, .	7,342	{ Ma. 3,479 Fe. 3,863	1.44	106	51 55	15 9	4 2	1 3	3 1	1 —
Dover, .	645	{ Ma. 311 Fe. 334	1.86	12	4 8	1 —	— —	— —	— —	— —
Foxborough, .	3,057	{ Ma. 1,301 Fe. 1,756	1.31	40	18 22	1 —	2 1	— 1	— 1	— —
Franklin, .	2,512	{ Ma. 1,163 Fe. 1,349 U. .	1.39 .	35 .	16 18 1	3 3 1	— — —	2 — —	1 1 —	— — —
Hyde Park, .	4,136	{ Ma. 2,017 Fe. 2,119	1.74	72	39 33	12 10	4 2	— 1	— 3	1 1
Medfield, .	1,142	{ Ma. 525 Fe. 617	1.93	22	9 13	1 1	— 1	— 1	— —	— —
Medway, .	3,721	{ Ma. 1,823 Fe. 1,898	1.40	52	26 26	3 2	2 —	— —	1 —	1 —
Milton, .	2,683	{ Ma. 1,272 Fe. 1,411	1.27	34	13 21	2 3	— —	1 —	— —	— —
Needham, .	3,607	{ Ma. 1,749 Fe. 1,858	1.66	60	39 21	13 2	3 1	1 —	— —	1 —
Norfolk, .	1,081	{ Ma. 566 Fe. 515	.74	8	7 1	2 —	— —	— —	— —	— —
Quincy, .	7,442	{ Ma. 3,791 Fe. 3,651	1.79	133	70 63	22 16	2 7	1 1	— 1	2 —
Randolph, .	5,642	{ Ma. 2,782 Fe. 2,860 U. .	2.15 .	121 .	59 61 1	12 9 1	3 3 —	1 1 —	1 2 —	1 — —

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 to over	Unknown.
3 - 3	4 1 8	3 2 1	4 3 1	2 1 1	4 2 2	2 1 1	3 - 8	3 1 2	2 1 1	5 3 2	5 4 1	7 4 3	12 7 5	9 4 5	9 6 3	1 - 1	2 - 2	1 1 -	1 1 -
39 21 18	24 9 15	50 18 32	82 35 47	76 31 45	53 24 29	61 26 35	38 18 20	47 23 24	45 24 21	48 17 26	50 29 21	71 41 30	74 39 35	71 40 31	54 16 38	38 18 25	20 7 13	4 2 2	10 5 5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	1 1	-	-	1 1	-	1 1	-	-	2 1	8 -	-	-	-	-	-	1 1
1 -	-	1 1	4 3	1 -	1 3	1 2	1 -	2 1	1 1	1 -	3 1	1 1	3 2	3 4	2 -	1 1	1 2	-	-
3 1	-	1 1	3 2	-	3 -	1 -	1 2	-	-	2 1	1 -	3 4	1 1	1 3	1 3	1 1	1 3	-	3 -
1 2	-	1 3	5 -	1 2	5 -	1 -	1 -	2 -	2 -	3 -	2 -	2 -	-	1 3	1 -	2 -	1 -	-	2 -
-	-	-	1 1	-	-	1 1	1 -	-	2 -	-	-	-	-	-	1 1	1 8	-	-	-
2 3	-	2 3	1 6	2 3	1 1	2 1	1 1	1 1	1 1	1 2	4 -	3 1	3 2	2 4	1 4	1 2	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	2 1	1 1	-	1 -	-	-	-
-	-	1 -	1 1	1 1	1 2	1 4	-	2 1	2 1	2 1	1 2	3 -	1 2	-	-	-	2 -	-	-
-	-	-	-	-	2 3	1 -	1 2	1 -	1 -	-	1 -	-	2 -	-	1 1	-	-	-	-
1 -	-	1 -	2 1	2 1	5 1	2 1	-	1 1	1 1	1 1	1 2	2 1	1 -	1 -	-	-	-	-	-
-	1 1	-	-	1 1	-	1 -	1 1	-	-	-	1 1	1 1	-	2 1	2 1	-	1 1	-	1 -
-	1 1	-	2 4	1 2	2 1	-	1 2	1 4	2 1	-	2 1	3 2	3 2	1 1	1 1	-	-	-	-
-	-	-	2 -	-	3 -	-	1 1	-	1 1	2 -	-	2 2	2 2	2 3	-	1 -	1 1	-	-
3 1	-	1 1	2 2	3 2	-	1 3	1 1	1 -	1 1	1 1	1 -	2 1	3 1	2 1	-	-	-	-	-
-	-	-	-	-	-	1 -	-	-	-	1 -	-	-	1 -	-	1 1	-	1 -	-	-
1 2	2	2	4 4	5	2	2	2	2	2	1	4	4	5	4	2	3	2	-	-
3 1	-	3	3 4	3	1	4	1	2	4	-	3	5	2	4	-	-	-	-	1
-	-	-	-	-	-	6	4	-	-	-	-	4	4	-	4	5	1	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons.	Sex.					
<i>Norfolk—Con.</i>										
Sharon, . . .	1,508	{ Ma. 729 Fe. 779	2.06	81	15 16	3 2	— —	1 1	1 —	— 1
Stoughton, . .	4,914	{ Ma. 2,449 Fe. 2,465	1.63	80	43 37	7 6	3 2	2 2	1 3	1 1
Walpole, . . .	2,137	{ Ma. 1,021 Fe. 1,116	1.26	27	15 12	— 1	— —	— —	— —	— —
West Roxbury, .	8,683	{ Ma. 3,993 Fe. 4,690	1.16	101	50 51	10 9	4 4	2 1	2 1	— 1
Weymouth, . .	9,010	{ Ma. 4,502 Fe. 4,508	1.55	140	66 74	20 18	6 2	2 1	1 —	— —
Wrentham, . .	2,292	{ Ma. 1,074 Fe. 1,218	1.44	33	12 21	2 1	— 1	— 1	— —	— —
PLYMOUTH Co.,	65,365	{ Tot. 65,365 Ma. 32,116 Fe. 33,249 U. .	. 1.63 . .	. 1,062 . .	1,062 535 523 4	169 92 78 4	49 24 25 —	17 10 7 —	14 4 10 —	7 2 5 —
Abington, . . .	9,308	{ Ma. 4,688 Fe. 4,620 U. .	1.19 . .	111 . .	50 58 3	12 12 3	3 2 —	1 1 —	— 1 —	— 1 —
Bridgewater, . .	3,660	{ Ma. 1,775 Fe. 1,885	1.04	38	22 16	1 3	— —	1 1	— —	— 2
State Almshouse at Bridgewater,	—	{ Ma. — Fe. —	—	75	45 30	10 7	— 4	— —	— —	— —
Carver, . . .	1,092	{ Ma. 556 Fe. 536	3.20	35	16 19	1 —	— 1	1 —	— 1	— —
Duxbury, . . .	2,341	{ Ma. 1,153 Fe. 1,188	1.24	29	15 14	— —	— 2	— —	— —	— —
E. Bridgewater, .	3,017	{ Ma. 1,465 Fe. 1,552	1.79	54	24 30	3 2	3 1	— —	— 1	— —
Halifax, . . .	619	{ Ma. 292 Fe. 327	1.62	10	6 4	— 1	— —	— —	— —	— —
Hanover, . . .	1,628	{ Ma. 792 Fe. 836	.92	15	6 9	1 —	— 1	— —	— —	1 —
Hanson, . . .	1,219	{ Ma. 596 Fe. 623	.90	11	9 2	2 —	— —	— —	— —	— —
Hingham, . . .	4,422	{ Ma. 2,070 Fe. 2,352	1.09	75	33 42	6 5	2 1	1 —	1 —	— —
Hull, . . .	261	{ Ma. 134 Fe. 127	.76	2	1 1	1 —	— —	— —	— —	— —
Kingston, . . .	1,604	{ Ma. 765 Fe. 839	2.06	33	12 21	2 1	— —	— —	1 —	— —

Age and Sex, by Towns.

															80 to 85	85 to 90	90 to 95.	95 & over.	Unknown.
-	-	-	1	-	-	-	-	-	1	1	-	-	1	1	1	2	1	-	-
1	-	-	2	2	2	2	3	1	-	2	-	-	1	3	1	1	-	-	-
1	-	-	2	-	-	1	-	-	2	1	-	1	-	1	2	2	-	1	-
1	1	-	-	-	-	-	-	-	1	-	-	-	1	1	1	-	-	-	-
2	-	4	2	7	3	2	-	2	2	1	2	1	2	1	1	-	-	-	-
1	1	2	5	3	-	2	2	-	1	2	1	5	1	1	1	1	-	-	-
2	1	2	4	4	1	4	1	1	2	2	2	3	5	-	1	-	-	-	2
2	1	2	6	2	-	7	3	7	2	-	1	3	2	5	1	-	-	-	-
-	1	-	-	1	-	-	-	-	-	1	-	1	1	1	1	2	-	-	-
1	1	-	-	1	-	2	-	-	-	3	1	2	1	1	1	-	-	-	-
21	27	40	42	42	51	33	31	44	30	62	55	77	89	52	37	18	2	4	-
9	11	19	15	15	21	16	11	24	19	35	34	47	51	24	14	6	1	1	-
12	16	22	25	27	30	17	10	20	17	27	22	30	38	22	11	1	1	3	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	3	5	1	3	2	3	3	1	-	4	3	4	-	-	-	-	-	-
2	4	5	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1	1	2	-	-	1	-	-	1	1	2	2	1	-	2	-	-	-	-
-	-	-	-	1	-	1	-	1	1	1	-	2	-	-	2	-	-	-	-
-	-	1	-	4	2	1	2	4	3	3	3	6	2	-	-	-	-	-	-
-	-	3	2	2	3	1	1	2	1	-	-	1	2	-	-	-	-	-	-
1	-	-	1	1	2	-	-	2	-	2	2	-	4	-	-	1	-	-	-
-	-	-	-	1	2	-	1	-	2	-	1	2	4	2	1	-	-	-	-
-	-	-	1	1	-	1	-	1	2	2	-	1	3	1	1	-	-	-	-
1	-	-	1	-	-	1	-	-	1	1	1	2	3	2	1	1	-	-	-
2	-	-	-	1	3	1	3	1	1	1	2	1	1	1	3	-	-	-	-
-	1	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-
-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-
1	-	1	1	-	-	2	2	2	3	3	2	2	1	2	1	1	-	-	-
1	1	2	-	5	1	-	2	1	-	1	2	5	6	4	1	3	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
-	-	2	1	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-
1	2	2	1	1	-	1	-	-	1	2	-	1	3	2	2	-	-	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.			DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.		Per ct. to Pop.	Persons.	Sex.					
<i>Plymouth—Con.</i>											
Lakeville, . .	1,159	{ Ma. 572 Fe. 587		1.47	17	8 9	1 2	-	-	-	-
Marion, . .	896	{ Ma. 431 Fe. 465		2.37	21	15 6	2 -	1	-	-	-
Marshfield, .	1,659	{ Ma. 809 Fe. 850		1.45	24	18 6	2 -	-	-	-	-
Mattapoisett, .	1,361	{ Ma. 631 Fe. 730		2.20	30	18 12	2 -	-	1	-	-
Middleborough, .	4,687	{ Ma. 2,263 Fe. 2,424		1.69	79	39 40	5 6	5 3	1	-	-
No. Bridgewater,	8,007	{ Ma. 4,035 Fe. 3,972 U. .		1.60	128	55 72 1	16 15 1	2 7 -	3 2	1 2	1 -
Pembroke, . .	1,447	{ Ma. 748 Fe. 699		1.31	19	14 5	1 1	1	-	-	-
Plymouth, . .	6,238	{ Ma. 2,979 Fe. 3,259		1.70	106	55 51	7 8	3 1	-	2	-
Plympton, . .	804	{ Ma. 400 Fe. 404		1.74	14	3 11	- 1	-	-	-	-
Rochester, . .	1,024	{ Ma. 497 Fe. 527		1.95	20	10 10	2 1	-	-	-	-
Scituate, . .	2,350	{ Ma. 1,164 Fe. 1,186		1.15	27	14 13	5 4	2	-	1	-
South Scituate, .	1,661	{ Ma. 830 Fe. 831		1.87	31	14 17	1 2	-	1	-	-
Wareham, . .	3,098	{ Ma. 1,603 Fe. 1,495		1.19	37	23 14	7 1	1 2	-	1	-
W. Bridgewater,	1,803	{ Ma. 868 Fe. 935		1.16	21	10 11	2 1	1	-	-	-
SUFFOLK CO., .	270,802	{ Tot. 270,802 Ma. 129,482 Fe. 141,320 U. .		. 2.37 .	. 6,428 .	6,428 3,267 3,160 1	1746 955 790 1	564 284 280 -	233 120 113 -	131 73 58 -	89 87 52 -
Boston, . .	250,526	{ Ma. 119,917 Fe. 130,609		2.43	6,098	3,102 2,996	908 746	276 269	109 107	70 56	35 46
Chelsea, . .	18,547	{ Ma. 8,652 Fe. 9,895		1.68	312	162 150	46 42	8 11	11 6	2 2	2 5
Revere,* . .	1,197	{ Ma. 652 Fe. 545		1.00	12	2 10	1 2	-	-	-	-
Winthrop, . .	532	{ Ma. 261 Fe. 271 U. .		1.13 . .	6 . .	1 4 1	- - 1	- - -	- - -	1 - -	- - -

* Name changed from North Chelsea, 1871.

1870.]

DEATHS.

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 to 100
-	-	-	-	-	1	-	1	-	-	-	1	-	2	2	-	-	-	-
-	-	1	1	1	1	-	-	-	1	-	1	-	4	1	1	-	-	-
-	-	-	-	1	1	-	-	-	-	-	1	-	-	-	3	1	-	-
-	-	1	1	-	-	-	-	1	-	-	3	1	3	2	3	1	-	-
-	1	-	-	-	3	-	-	-	1	1	1	2	1	1	2	-	2	-
-	-	-	1	-	3	-	1	-	-	1	1	3	-	-	1	-	-	-
3	2	1	-	1	1	1	1	1	3	1	3	-	5	6	2	1	-	-
-	1	2	4	4	3	1	3	1	3	1	2	3	2	5	1	-	-	-
2	1	-	7	5	1	4	3	4	2	1	1	1	3	4	-	2	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	1	1	1	-	-	1	-	-	-	-	3	1	1	1	1	1
-	-	-	1	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-
3	1	-	3	3	3	1	-	3	4	3	6	3	5	3	2	1	1	1
-	2	1	2	-	2	-	3	1	3	1	4	2	5	1	3	4	2	2
-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
-	-	-	1	-	1	-	-	3	-	-	-	1	-	1	-	-	-	-
-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
-	-	-	-	-	-	-	1	-	1	-	-	2	1	-	1	1	1	-
1	1	-	-	-	1	-	2	-	-	1	-	1	1	3	-	1	-	-
-	3	1	-	2	-	1	1	-	-	-	2	-	1	3	-	1	-	-
-	-	2	-	-	1	2	2	1	-	2	2	1	1	-	-	-	-	-
-	-	1	-	-	-	-	-	-	1	-	-	1	1	-	-	-	-	-
-	1	1	1	1	1	-	-	2	1	-	1	1	-	2	1	2	1	2
187	104	205	374	331	325	314	262	263	218	220	175	191	185	113	105	54	23	23
102	47	87	163	151	153	160	123	165	124	139	93	101	82	45	31	21	6	6
35	57	118	211	180	172	154	139	103	94	81	82	90	103	68	74	33	17	17
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
97	45	79	154	144	146	149	119	155	116	132	90	98	77	42	31	19	6	6
76	56	110	198	173	166	146	133	98	91	79	77	87	100	63	65	32	17	17
5	2	3	9	7	7	11	4	10	8	7	3	3	5	2	-	2	-	-
9	1	7	12	7	6	7	6	1	3	2	4	3	3	4	8	1	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
-	-	-	1	-	-	-	-	2	-	-	-	-	-	1	1	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	-	2	-	-	1	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE VII.—Continued.

COUNTIES AND TOWNS.	POPULATION—1870.		DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.	Per ct. to Pop.	Persons.	Sex.					
WORCESTER Co.,	192,716	{ Tot. 192,716 Ma. 95,201 Fe. 97,515 U. .	. 1.80 . .	. 3,465 . .	3,465 1,780 1,679 6	779 431 342 6	277 151 126 —	124 68 56 —	67 39 28 —	42 19 23 —
Ashburnham, .	2,172	{ Ma. 1,102 Fe. 1,070	1.84	40	25 15	7 1	4 2	1 —	1 1	1 —
Athol, . .	3,517	{ Ma. 1,732 Fe. 1,785	2.27	80	40 40	9 10	1 2	5 —	1 1	— 1
Auburn, . .	1,178	{ Ma. 596 Fe. 582	1.19	14	9 5	1 —	1 —	— —	— —	— —
Barre, . .	2,572	{ Ma. 1,252 Fe. 1,320	1.40	36	17 19	2 3	1 1	— —	— —	— —
Berlin, . .	1,016	{ Ma. 491 Fe. 525	1.57	16	7 9	— —	— —	— —	— —	— —
Blackstone, .	5,421	{ Ma. 2,497 Fe. 2,924	1.47	80	36 44	7 3	1 1	1 3	1 —	— —
Bolton, . .	1,014	{ Ma. 530 Fe. 484	1.68	17	5 12	4 2	— —	— —	— —	— —
Boylston, . .	800	{ Ma. 392 Fe. 408	2.62	21	13 8	1 2	— 1	1 —	— —	1 —
Brookfield, .	2,527	{ Ma. 1,250 Fe. 1,277	1.42	36	16 20	2 6	— 2	1 1	1 —	— —
Charlton, . .	1,878	{ Ma. 929 Fe. 949	1.60	80	15 15	1 1	1 —	— —	— —	— —
Clinton, . .	5,429	{ Ma. 2,422 Fe. 3,007	2.06	112	47 65	7 16	11 9	2 5	1 —	— 2
Dana, . .	758	{ Ma. 369 Fe. 389	2.51	19	9 10	2 —	— —	— 1	1 —	— —
Douglas, . .	2,182	{ Ma. 1,091 Fe. 1,091	2.11	46	27 19	8 9	1 1	— 1	1 —	— —
Dudley, . .	2,388	{ Ma. 1,179 Fe. 1,209	1.13	27	10 17	2 2	— 2	— —	1 —	— 1
Fitchburg, . .	11,260	{ Ma. 5,663 Fe. 5,597	1.85	208	109 99	33 30	7 8	5 5	3 2	— 1
Gardner, . .	3,333	{ Ma. 1,657 Fe. 1,676	1.65	55	26 29	8 7	1 3	— —	— 2	— 1
Grafton, . .	4,594	{ Ma. 2,285 Fe. 2,309 U. .	1.35 . .	62 . .	27 34 1	4 5 1	2 1 —	— — —	— 2 —	— — —
Hardwick, . .	2,219	{ Ma. 1,102 Fe. 1,117	.54	12	5 7	1 —	— 2	— —	— —	— —
Harvard, . .	1,341	{ Ma. 636 Fe. 705	2.09	28	17 11	5 2	1 —	— —	— —	— —

Age and Sex, by Towns.

[illegible]

TABLE VII.—Continued.

Holden, . . .	2,062	{ Ma. Fe.	1,040 1,022	1-39	29	20 19	8 11	- -	1 1	- -	- -
Hubbardston, . .	1,654	{ Ma. Fe.	801 793	1-51	25	12 13	9 1	- 1	1 1	- -	- -
Lancaster, . . .	1,345	{ Ma. Fe.	812 1,033	1-57	29	17 11	4 2	- -	- -	- -	- -
Leicester, . . .	2,768	{ Ma. Fe.	1,327 1,431	2-06	57	28 19	7 2	4 2	4 1	1 -	- -
Leominster, . . .	2,394	{ Ma. Fe.	1,254 1,240	2-26	59	54 25	11 5	2 -	1 -	- 1	- -
Lanesburg, . . .	1,121	{ Ma. Fe.	541 530	1-43	16	6 10	- 1	- -	- -	- -	- -
Mendon, . . .	1,175	{ Ma. Fe.	576 599	1-36	16	7 9	1 2	1 1	- -	2 -	- -
Milford, . . .	2,890	{ Ma. Fe.	4,970 4,920	2-11	208	100 86	35 21	12 11	6 -	5 -	- 2
Millbury, . . .	4,397	{ Ma. Fe. U.	2,131 2,266 .	1-40	96	11 43 1	12 9 1	2 8 -	5 5 -	1 1 -	2 2 -
New Braintree, . .	646	{ Ma. Fe.	326 314	1-09	7	4 3	1 -	- -	- -	- -	- -
Northborough, . .	1,504	{ Ma. Fe.	717 737	1-11	24	11 11	1 1	- -	- -	- -	- -
Northbridge, . . .	2,774	{ Ma. Fe.	1,360 1,205	1-08	39	20 10	8 1	2 -	- -	2 -	- -
No. Brookfield, . .	2,343	{ Ma. Fe. U.	1,726 1,617 .	1-53	53	25 17 1	8 10 1	4 1 -	1 1 -	- -	1 -
Oakham, . . .	360	{ Ma. Fe.	422 437	1-11	21	10 11	1 2	- -	1 -	- -	- -
Oxford, . . .	2,669	{ Ma. Fe.	1,293 1,376	1-53	22	26 23	4 3	1 -	1 -	1 -	- 1
Paxton, . . .	646	{ Ma. Fe.	316 323	1-11	9	5 4	- -	1 -	- -	- -	- -
Petersham, . . .	1,335	{ Ma. Fe.	657 673	1-40	24	10 14	2 1	- -	- -	- -	- -
Phillipston, . . .	693	{ Ma. Fe.	355 333	1-01	7	3 4	- -	- -	- -	- -	- -
Princeton, . . .	1,279	{ Ma. Fe.	653 636	1-05	25	14 11	1 1	- -	1 -	- -	- -
Royalston, . . .	1,354	{ Ma. Fe.	674 680	1-70	23	11 12	3 1	- -	- -	- -	1 -

Age and Sex, by Towns.

[illegible]

TABLE VII.—Concluded.

COUNTIES AND TOWNS.	POPULATION—1870.			DEATHS.			Und. 1	1 to 2	2 to 3	3 to 4	4 to 5
	Persons.	Sex.		Per ct. to Pop.	Persons.	Sex.					
Worcester—Con.											
Rutland, . .	1,024	{ Ma.	532	1.46	15	6	2	—	—	—	—
		{ Fe.	492			9	—	—	—	—	—
Shrewsbury, .	1,610	{ Ma.	820	1.80	29	11	1	1	—	—	—
		{ Fe.	790			18	2	1	1	—	—
Southborough, .	2,135	{ Ma.	1,060	1.73	37	16	3	—	—	—	—
		{ Fe.	1,075			21	1	—	1	—	—
Southbridge, .	5,208	{ Ma.	2,506	1.82	95	41	12	6	—	—	1
		{ Fe.	2,702			54	19	4	1	—	1
Spencer, . .	3,952	{ Ma.	2,111	1.52	60	32	11	4	3	—	2
		{ Fe.	1,841			28	8	3	2	1	—
Sterling, . .	1,670	{ Ma.	812	1.50	25	14	3	—	—	—	—
		{ Fe.	858			11	2	—	—	—	—
Sturbridge, .	2,101	{ Ma.	985	1.90	40	19	3	3	—	1	—
		{ Fe.	1,116			21	4	3	—	1	—
Sutton, . .	2,699	{ Ma.	1,314	1.26	24	18	3	1	1	—	—
		{ Fe.	1,385			16	2	2	1	1	—
Templeton, .	2,802	{ Ma.	1,418	1.75	49	28	7	3	—	—	—
		{ Fe.	1,384			21	2	1	1	2	—
Upton, . .	1,989	{ Ma.	959	1.36	27	12	1	1	—	—	—
		{ Fe.	1,030			15	5	2	—	—	—
Uxbridge, . .	3,058	{ Ma.	1,475	1.24	38	20	4	—	2	1	—
		{ Fe.	1,583			18	1	2	2	—	2
Warren, . .	2,625	{ Ma.	1,306	1.03	27	9	3	—	—	—	—
		{ Fe.	1,319			18	2	1	1	—	—
Webster, . .	4,763	{ Ma.	2,331	1.15	55	29	5	4	—	2	1
		{ Fe.	2,432			26	1	1	5	—	1
Westborough, .	3,601	{ Ma.	1,854	1.86	67	44	11	12	—	—	—
		{ Fe.	1,747			23	4	2	—	—	—
W. Boylston, .	2,862	{ Ma.	1,447	1.54	44	16	3	3	1	—	1
		{ Fe.	1,415			28	7	1	2	—	1
W. Brookfield, .	1,842	{ Ma.	884	1.90	35	18	3	1	2	—	—
		{ Fe.	958			16	4	2	—	—	—
		{ U.	.		.	1	1	—	—	—	—
Westminster, .	1,770	{ Ma.	865	1.98	35	13	1	1	—	—	1
		{ Fe.	905			22	3	—	—	—	—
Winchendon, .	3,398	{ Ma.	1,709	2.15	73	41	6	1	4	2	—
		{ Fe.	1,689			32	7	1	1	2	1
Worcester, . .	41,105	{ Ma.	20,405	2.18	895	473	141	49	20	12	8
		{ Fe.	20,700			417	101	44	18	9	5
		{ U.	.		.	2	2	—	—	—	—

Age and Sex, by Towns.

5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	75 to 80	80 to 85	85 to 90	90 to 95	95 & over.	Unknown.
-	-	-	-	-	-	1	-	-	-	-	-	1	-	2	-	-	-	-	-
-	3	-	-	1	-	-	-	-	-	-	-	1	-	2	1	1	-	-	-
1	1	-	1	1	1	-	1	1	-	-	2	1	-	1	-	2	-	-	-
1	-	-	2	2	-	-	1	-	3	2	1	1	2	2	2	-	-	-	-
3	1	3	1	2	-	-	3	1	-	-	2	1	2	-	2	2	-	-	-
1	1	6	2	1	1	-	2	-	1	2	2	1	4	3	1	-	-	-	1
-	-	1	-	2	-	-	1	2	1	2	-	-	-	2	-	1	-	-	-
-	1	1	2	2	3	1	-	-	-	-	2	-	1	1	-	-	-	-	-
-	1	1	-	1	1	-	1	-	1	-	1	1	1	-	-	2	1	-	-
-	1	1	-	1	1	-	-	-	-	1	-	1	-	1	1	1	-	-	-
-	2	-	2	2	-	-	-	-	-	-	1	-	-	3	2	-	1	-	-
-	-	1	1	1	-	-	1	-	-	1	-	2	-	3	1	1	1	-	-
1	-	-	1	1	1	1	-	1	-	4	1	-	1	1	1	2	-	-	-
1	1	-	3	2	-	-	2	-	-	1	1	2	1	1	1	1	1	-	-
-	-	-	2	1	1	1	2	-	-	-	2	2	1	2	-	1	-	-	-
-	-	-	1	-	-	1	-	1	1	1	2	1	-	1	1	2	-	-	-
-	-	-	-	2	-	1	-	1	-	-	-	-	-	-	2	2	-	-	-
2	1	-	1	1	-	-	-	-	-	-	1	1	3	1	2	-	-	-	-
1	-	1	1	2	1	1	-	-	-	2	-	-	-	1	-	-	1	-	-
1	1	-	2	2	1	2	-	1	-	1	-	3	1	2	-	-	-	-	-
1	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-
1	-	3	3	4	1	-	1	-	-	2	2	2	3	2	1	-	-	-	1
3	1	1	-	2	2	-	-	-	-	2	3	1	-	2	4	-	-	-	-
1	1	2	2	1	1	1	1	-	-	1	1	-	1	1	2	1	-	-	-
2	-	-	1	-	1	-	-	1	1	-	-	-	-	1	-	1	-	-	-
1	1	-	4	1	1	1	1	1	1	-	1	-	3	1	-	1	-	-	-
1	-	-	-	-	1	1	1	1	1	-	-	1	4	1	1	-	-	-	-
-	-	1	-	-	2	1	-	-	-	-	-	-	2	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	2	-	1	-	-	-	1	-	1	1	-	2	1	1	-	-	-	1	-
1	-	2	2	-	2	-	-	1	2	1	1	2	-	1	2	1	-	-	-
4	-	2	-	1	1	4	1	2	-	-	2	1	4	5	-	1	-	-	-
1	-	1	3	2	4	1	2	1	1	-	-	1	-	3	-	-	-	-	-
10 19	6 10	17 24	23 22	25 24	21 25	23 17	18 15	17 13	17 12	14 10	10 11	13 10	9 8	12 10	9 11	- 3	1 1	1 -	- -

CAUSES OF DEATH.

TABLE VIII.—Continued.

[illegible]

TABLE VIII.—Continued.

SEX.	DEATHS.			MONTHS.												CAUSES OF DEATH.	AGES.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	SEX.			Totals.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.		December.	Unknown.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Males.	Fem.	Unk.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Males, Fem.,	6	7	.	13	—	1	—	1	—	1	—	—	2	—	1	—	—	Ascites, .	—	1	—	—	1	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TABLE VIII.--Continued.

SEX.		DEATHS.			MONTHS.												CAUSES OF DEATH.	AGES.																		
		SEX.			Totals.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.		December.	Unknown.	Under 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	Over 80.	Unknown.				
		Males.	Fem.	Unk.																																
Males,	Fem.,	233	.	.	434	17	21	17	13	18	11	—	8	19	27	40	42	—	.	200	28	3	—	1	—	—	—	—	—	—	—	—	—	—	—	
.	201	.	.	.	.	20	18	29	8	15	13	7	10	10	14	27	30	—	.	175	25	1	—	—	—	—	—	—	—	—	—	—	—	—	—	
Males,	Fem.,	15	.	.	24	2	4	1	—	1	—	1	3	1	1	—	1	—	.	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
.	9	.	.	.	.	1	1	—	—	—	—	—	2	1	1	1	—	—	.	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Males,	Fem.,	15	.	.	19	—	—	2	2	2	2	1	—	1	1	3	1	—	.	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
.	4	.	.	.	.	1	1	—	—	—	—	—	—	—	—	—	—	—	.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Males,	Fem.,	205	.	.	385	18	10	16	17	10	18	18	29	16	17	15	21	—	.	124	1	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—
.	180	.	.	.	.	16	14	11	7	10	16	17	23	23	20	11	12	—	.	98	2	—	6	—	—	—	—	—	—	—	—	—	—	—	—	—
Males,	Fem.,	22	.	.	27	1	1	—	3	2	8	3	3	—	1	2	3	—	Delirium Tremens,	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—
.	5	.	.	.	.	—	1	—	—	1	—	2	—	1	—	—	—	—	“	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Males,	Fem.,	235	.	.	457	12	7	5	7	7	12	48	59	80	30	10	8	—	.	158	1	1	2	10	—	—	—	—	—	—	—	—	—	—	—	—
.	222	.	.	.	.	6	2	1	8	9	11	47	54	39	23	15	7	—	.	140	2	—	1	10	—	—	—	—	—	—	—	—	—	—	—	—
Males,	Fem.,	85	.	.	55	3	2	1	2	4	3	3	3	1	6	1	6	—	.	—	1	1	2	2	—	—	—	—	—	—	—	—	—	—	—	—
.	20	.	.	.	.	3	3	1	—	1	1	1	—	1	2	6	1	—	.	1	2	1	4	—	—	—	—	—	—	—	—	—	—	—	—	—
Males,	Fem.,	116	.	.	242	11	7	8	11	5	1	7	6	17	16	16	16	—	.	74	28	4	6	—	—	—	—	—	—	—	—	—	—	—	—	—
.	125	.	.	.	.	20	13	10	3	8	5	5	7	13	7	17	17	—	.	63	29	13	4	5	—	—	—	—	—	—	—	—	—	—	—	—
Unk.,	.	.	.	.	.	—	—	—	—	—	—	—	—	—	—	—	1	—	.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TABLE VIII.—Continued.

[illegible]

1870.]

CAUSES OF DEATH.

lxxxi

Males, Fem.,	84 .	. 43	. .	127 .	6 5	9 5	3 4	4 6	6 5	5 2	8 4	14 1	5 3	9 3	11 2	4 8	- -	Kidney Disease, "	. .	4 4	- 2	1 -	3 1	2 12	4 4	6 4	8 2	27 5	23 4	6 5	- -	
Males, Fem.,	7 .	. 5	. .	12 .	1 -	1 1	- -	1 -	- 1	1 -	- -	1 -	- -	2 -	1 1	1 -	- -	Laryngitis, "	. .	5 3	1 -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	- -	- -
Males, Fem.,	8 .	. 2	. .	5 .	- -	- -	- -	- -	- -	2 -	1 -	2 -	- -	- -	- -	- -	- -	Lightning, "	. .	- 1	- -	- -	1 -	- -	1 -	- -	- -	- -	1 -	- -	- -	- -
Males, Fem.,	101 .	. 93	. .	194 .	5 8	5 6	8 7	11 6	11 6	9 12	10 10	9 5	9 7	8 10	8 9	8 7	- -	Liver Disease, "	. .	7 9	2 2	- -	2 1	7 6	6 10	14 11	24 18	27 19	8 13	4 -	- -	
Males, Fem.,	114 .	. .	. .	114 .	10 -	1 -	22 -	- -	18 -	- -	- -	1 -	20 -	39 -	2 -	1 -	- -	Lost at Sea, "	. .	- -	- -	2 -	14 -	3 -	2 -	- -	1 -	- -	- -	- -	90 -	- -
Males, Fem.,	23 .	. 32	. .	55 .	2 1	3 1	3 4	1 4	2 4	2 3	2 -	- 1	- 2	3 2	1 4	4 6	- -	Lungs, Disease of, "	. .	9 6	- 3	- 1	1 -	3 5	2 7	3 3	1 2	1 2	3 2	1 -	- -	- -
Males, Fem.,	17 .	. 8	. .	25 .	4 -	1 1	1 -	1 -	2 1	4 1	- -	1 2	1 2	2 1	- -	1 -	- -	Malformation, "	. .	17 8	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Males, Fem.,	4 .	. 1	. .	5 .	- 1	- -	1 -	- -	- -	- -	- -	- -	2 -	1 -	- -	- -	- -	Malignant Pustule, "	. .	- -	- -	- -	- -	- -	1 1	- -	- -	- -	- -	- -	- -	- -
Males, Fem.,	141 .	. 128	. .	269 .	12 12	20 20	16 24	16 18	19 13	21 7	11 15	12 8	4 3	2 1	3 3	5 4	- -	Measles, "	. .	114 104	11 13	2 -	2 1	3 3	3 2	2 1	- 1	1 1	1 1	- -	- -	
Fem.,	. .	66 .	. .	66 .	9 .	3 .	4 .	7 .	5 .	6 .	6 .	6 .	3 .	3 .	6 .	8 .	- -	Metria (Puer. Fev.),	. .	- -	- -	3 .	31 .	26 .	6 .	- .	- .	- .	- .	- .	- .	
Fem.,	. .	5 .	. .	5 .	1 .	2 .	- .	- .	- .	- .	- .	1 .	- .	- .	- .	1 .	- -	Metritis, "	. .	- -	- -	- -	2 .	1 .	2 .	- .	- .	- .	- .	- .	- .	- .
Males, Fem.,	81 .	. 15	. .	46 .	3 1	2 3	1 2	3 2	- 2	3 -	2 -	3 -	4 -	5 3	3 1	2 1	- -	Mortification, "	. .	- 1	- -	- -	- -	- -	2 1	2 1	2 5	11 7	9 1	- -	- -	

TABLE VIII.—Continued.

SEX.	DEATHS.			MONTHS.												CAUSES OF DEATH.	AGES.														
	Males	SEX.		Totals.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.		December.	Unknown.	Under 5	5 to 10	10 to 15	15 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	Over 80	Unknown.	
		Fem.	Unk.																												
Males, Fem.,	6	1	7	-	2	-	-	-	-	2	-	1	1	-	1	-	Murder,	1	-	-	-	-	2	1	-	-	1	-	1	-	Unknown.
Males, Fem.,	6	2	8	-	-	-	1	1	-	-	-	1	2	-	-	-	Necrosis,	-	1	-	-	1	1	2	-	-	-	-	-	-	-
Males, Fem.,	86	54	140	10	3	6	9	10	13	7	8	8	8	3	5	4	Nephria(Bright's Dia.),	2	3	1	5	17	6	15	17	12	8	2	1	-	-
Males, Fem.,	10	9	19	2	-	-	2	-	3	-	1	1	-	1	-	1	Nephritis,	-	1	-	-	-	1	-	4	-	3	1	1	-	-
Males, Fem.,	14	7	21	-	1	1	1	1	2	2	1	1	1	1	1	2	Neuralgia,	-	-	-	1	1	-	1	-	6	3	2	-	-	-
Males, Fem., Unk.,	92	79	172	4	5	5	2	2	3	9	20	21	21	11	7	3	Noma (Canker),	90	1	1	-	-	-	-	-	-	-	-	-	-	1.
Males, Fem.,	601	843	1444	53	47	54	49	54	44	35	67	48	48	45	51	53	Old Age,	-	-	-	-	-	-	-	1	19	191	390	-	-	-
Fem.,	17	17	17	2	2	2	1	2	1	2	1	1	1	2	1	-	Ovarian Dropsy,	-	-	-	-	1	5	1	1	3	1	1	-	-	-

1870.]

CAUSES OF DEATH.

lxxxiii

Males, Fem.,	289	.	841	.	630	32	18	20	21	22	22	22	20	26	24	27	29	28	-	Paralysis, "	.	.	2	1	-	2	4	28	21	45	80	82	28	1		
	.	.	.	.	.	20	29	37	30	38	22	22	29	28	28	28	22	35	-	"	.	.	2	-	3	1	10	15	20	42	70	118	59	1	
Males, Fem.,	.	.	7	.	7	1	-	-	-	1	1	1	-	-	2	2	-	-	-	Paramenia, "	.	.	-	-	-	-	1	-	6	-	-	-	-	-	-	
Males, Fem.,	5	.	10	.	15	1	-	-	1	1	2	1	2	-	-	1	1	-	-	Pericarditis, "	.	.	-	-	1	1	1	2	-	-	-	1	-	-	-	
Males, Fem.,	30	.	56	.	86	6	2	-	1	3	-	5	3	3	3	8	2	4	-	Peritonitis, "	.	.	6	-	4	2	5	3	1	3	4	2	-	-	1	
Males, Fem.,	2	.	1	.	3	-	-	-	-	-	1	-	-	1	-	-	-	-	1	Phlebitis, "	.	.	-	-	-	-	-	1	1	-	-	-	-	-	-	
Males, Fem.,	35	.	26	.	61	5	4	3	3	3	3	4	3	1	-	3	2	5	-	Pleurisy, "	.	.	2	-	-	-	3	6	4	6	6	3	-	-	-	
Males, Fem.,	858	.	860	.	1718	104	99	114	88	77	58	45	37	39	41	50	80	71	-	Pneumonia, "	.	.	375	15	11	15	47	54	79	81	80	68	27	6		
	.	.	.	.	.	99	106	129	79	76	45	44	44	33	41	51	79	78	-	"	.	.	311	18	14	22	54	59	62	94	112	61	2		
Males, Fem.,	16	.	10	.	26	2	4	1	2	2	-	1	1	1	1	1	1	-	-	Poisoned, "	.	.	2	-	-	-	3	6	2	-	-	-	-	-	-	
Males, Fem.,	181	.	105	.	242	7	15	9	11	13	7	9	8	14	14	9	6	18	-	Premature Births, "	.	.	131	-	-	-	-	-	-	-	-	-	-	-	-	-
Unk.,	.	6	.	.	.	-	-	-	1	-	1	1	1	-	1	-	-	2	-	"	.	.	6	-	-	-	-	-	-	-	-	-	-	-	-	
Males,	9	.	.	.	9	2	-	1	-	2	-	-	2	-	1	-	-	1	-	Prostate, Disease of,	.	.	-	-	-	-	-	-	-	1	-	4	3	-	-	
Fem.,	.	17	.	.	17	2	2	2	3	1	1	3	3	1	-	-	-	2	-	Puerp. Convulsions,	.	.	-	-	1	10	5	-	-	-	-	-	-	-	1	

1870.]

CAUSES OF DEATH.

LXXXV

Males, Fem, Unk.,	70	60	181	9	7	4	9	8	6	2	2	1	4	18	-	Smallpox, " "	.	18	7	5	6	21	5	4	3	1	1	-	-	-			
Males, Fem.,	2	3	5	1	-	-	1	-	-	-	-	1	1	-	-	Spina Bifida, "	.	1	1	-	-	-	-	-	-	-	-	-	-	-	-		
Males, Fem.,	36	22	58	3	4	7	1	4	2	5	1	2	2	2	-	Spine Disease, "	.	8	3	4	1	8	2	1	4	5	3	2	2	-	-	-	
Males, Fem.,	2	.	2	-	-	-	-	1	-	-	-	1	-	-	-	Starvation, "	.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Males, Fem.,	14	15	29	1	2	1	-	-	1	3	2	1	2	1	-	Stomach Disease, "	.	2	2	-	-	1	3	8	6	2	3	1	3	-	-	-	-
Males, Fem.,	5	5	10	-	1	1	-	-	-	2	2	-	1	-	-	Strangulation, "	.	2	3	-	-	-	1	-	1	1	1	-	1	-	-	-	-
Males, Fem.,	2	3	5	1	-	1	-	-	1	-	-	1	-	-	-	Strict. of Intestines, "	.	-	-	-	-	-	-	-	2	1	2	-	2	-	-	-	-
Males, Fem,	3	3	6	-	-	-	1	-	1	1	-	-	-	-	-	Strict. Esophagus, "	.	-	-	-	-	-	-	-	2	1	1	1	-	-	-	-	-
Males,	3	.	3	-	2	1	-	-	-	-	-	-	-	-	-	Strict. Urethra,	.	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	
Males, Fem.,	16	10	26	1	-	1	1	1	-	2	1	3	3	1	-	Suddenly, "	.	1	1	1	1	1	2	1	1	4	2	6	1	2	-	-	-
Males, Fem,	15	2	17	1	1	1	3	1	2	3	1	1	1	-	-	Suffocation, "	.	8	1	1	1	1	2	2	1	-	-	-	-	-	-	-	-

TABLE VIII.—Concluded.

SEX.	DEATHS.			MONTHS.												CAUSES OF DEATH.	AGES.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	SEX.			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Unknown.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	Males	Fem.	Unk.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Males, Fem.,	70 .	21 .	.	91													Suicide, .	Under 5	5 to 10	10 to 15	15 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	Over 80	Unknown.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Males, Fem.,	2 .	.	.	2													Surgical Operation, .	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1</

1870.]

CAUSES OF DEATH.

lxxxvii

Males, Fem.,	20	71	.	91	4	8	5	3	1	6	1	1	1	1	4	-	Tumor, .	.	.	.	.	.	.	-	4	2	1	2	5	2	1	-
Males, Fem.,	6	4	.	10	1	2	1	1	1	10	7	5	6	6	6	1	Ulcers, .	.	.	.	.	.	.	-	2	1	1	2	11	13	1	-
Males, Fem.,	5	9	.	14	2	1	1	1	1	1	1	1	1	1	1	-	Ulcer of Intestines,	.	.	.	.	.	.	-	1	2	1	1	1	1	-	-
Males, Fem., Unk.,	530	560	.	1101	45	51	36	37	44	40	40	47	54	59	42	1	Unknown, .	.	.	.	.	.	.	-	317	15	9	20	17	28	120	-
Fem.,	.	11	.	.	25	36	56	37	40	43	58	66	54	43	55	1	"	.	.	.	.	.	.	-	282	13	14	43	44	32	118	-
Fem.,	.	18	.	18	-	-	2	-	-	1	2	4	1	1	1	-	"	.	.	.	.	.	.	-	11	-	-	-	-	-	-	-
Males, Fem., Unk.,	140	189	.	330	10	8	12	9	11	9	13	26	20	7	10	-	Whooping Cough, .	.	.	.	.	.	.	-	134	6	-	-	-	-	-	-
Fem.,	.	1	.	.	12	15	15	13	13	14	19	34	15	16	12	1	"	.	.	.	.	.	.	-	183	6	-	-	-	-	-	-
Unk.,	.	.	.	.	-	-	-	-	-	-	-	-	-	-	-	-	"	.	.	.	.	.	.	-	1	-	-	-	-	-	-	-
Males, Fem.,	2	5	.	7	-	-	-	-	2	-	-	-	-	-	-	-	Worms, .	.	.	.	.	.	.	-	1	1	-	-	-	-	-	-
Fem.,	.	.	.	.	-	-	-	-	2	-	-	-	-	1	-	-	"	.	.	.	.	.	.	-	8	2	-	-	-	-	-	-

TABLE IX.—CAUSES OF DEATH.—NOSOLOGICAL ARRANGEMENT.*

Exhibiting the Number of Deaths in each County, from specified causes (statistically classified), during the year

1870.

[Still-births included.]

CAUSES OF DEATH.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hamden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
All Causes,	28,348	486	1,003	1,871	166	3,635	559	1,530	772	5,315	1,448	1,076	6,949	3538
Specified Causes,†	26,998	453	916	1,753	150	3,482	520	1,445	718	5,087	1,361	1,008	6,802	3353
(CLASSES.)														
I.—ZYMOTIC DISEASES,	6,916	92	270	375	34	839	155	459	223	1,266	285	192	1,752	974
II.—CONSTITUTIONAL DISEASES,	7,185	125	207	554	30	1054	128	374	189	1,380	361	297	1,627	859
III.—LOCAL DISEASES,	7,556	132	252	507	39	837	147	326	197	1,447	433	335	2,021	883
IV.—DEVELOPMENTAL DISEASES,	4,206	79	129	256	39	549	71	214	84	770	225	159	1,114	517
V.—VIOLENT DISEASES,	1,135	25	58	61	8	203	19	72	25	174	57	25	288	120
(ORDERS.)														
I.—1. Miasmatic Diseases,	6,770	88	269	370	33	828	155	452	222	1,240	283	181	1,685	964
2. Enthetic Diseases,	47	—	—	—	—	4	—	2	—	11	—	10	18	2
3. Dietic Diseases,	90	8	1	5	1	7	—	4	—	18	1	1	49	5
4. Parasitic Diseases,	9	1	—	—	—	—	—	1	1	2	1	—	—	3
II.—1. Diathetic Diseases,	1,306	17	37	103	6	245	31	68	29	261	76	49	221	163
2. Tubercular Diseases,	5,879	108	170	451	24	809	97	806	160	1,119	235	248	1,406	696

III.—1. Diseases of Nervous System, . . .	2,776	51	81	216	16	314	58	118	76	521	165	130	688	847
2. Diseases of Organs of Circulation, . . .	1,001	23	31	57	9	129	21	41	25	204	72	55	225	109
3. Diseases of Respiratory Organs, . . .	2,185	23	83	127	5	289	39	112	71	406	100	84	649	247
4. Diseases of Digestive Organs, . . .	987	23	37	68	7	107	22	37	17	208	64	43	243	111
5. Diseases of Urinary Organs, . . .	392	9	12	19	2	28	5	12	6	74	20	18	142	45
6. Diseases of Generative Organs, . . .	40	-	2	1	-	8	1	1	1	10	-	1	17	8
7. Diseases of Organs of Locomotion, . . .	97	3	2	11	-	11	1	6	1	13	7	2	25	15
8. Diseases of Integumentary System, . . .	78	-	4	8	-	6	-	4	-	11	5	2	32	6
IV.—1. Dev. Diseases of Children, . . .	2,118	19	27	70	3	297	8	85	21	392	102	49	790	255
2. Dev. Diseases of Adults, . . .	259	2	17	20	2	29	7	14	7	46	19	9	43	44
3. Dev. Diseases of Old People, . . .	1,144	50	72	131	28	194	50	79	51	238	88	97	174	192
4. Diseases of Nutrition, . . .	385	8	13	35	6	29	6	36	5	94	16	4	107	26
V.—1. Accident or Negligence, . . .	687	23	26	41	7	147	8	49	15	104	28	15	163	61
2. Battle, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Homicide, . . .	29	-	3	2	-	4	-	1	-	2	3	-	11	3
4. Suicide, . . .	91	1	6	3	-	7	1	6	-	13	6	4	28	16
5. Execution, . . .	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6. Violent Deaths, not classed, . . .	328	1	23	15	1	45	10	16	10	55	20	6	86	40
Sudden Deaths (Cause unascertained), . . .	26	1	5	5	-	-	-	1	1	5	1	8	-	4
Causes not specified,† . . .	1,324	32	82	113	16	153	39	84	53	273	86	65	147	181

* See "Statistical Nosology" in Appendix. † Including Stillborn. ‡ Including 88 deaths from "Hemorrhage," 91 from "Tumor," and 49 from "Inflammation."

TABLE IX.—Continued.

CAUSES OF DEATH.		STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
DISEASES.															
I.—1. <i>Miasmatic.</i>															
Totals,	.	.	6,770	269	370	33	828	155	452	222	1,240	283	181	1,685	964
1. Smallpox,	.	.	131	1	3	1	5	1	49	4	6	1	—	85	25
2. Measles, .	.	.	269	13	15	—	32	6	15	4	65	2	—	78	37
3. Scarlatina,	.	.	683	34	43	2	64	10	31	29	79	31	23	237	98
4. Diphtheria,	.	.	242	22	9	—	31	5	9	12	56	7	6	45	36
5. Quinsy, .	.	.	8	1	—	—	3	—	1	—	1	—	—	2	—
6. Croup, .	.	.	434	19	23	—	77	1	28	9	99	17	12	87	59
7. Whooping Cough, .	.	.	330	9	21	1	48	10	29	14	72	19	4	58	45
8. Typhus (and Infantile Fever),	.	.	1,333	52	82	18	189	48	121	46	189	53	51	208	234
9. Erysipelas (and Phlebitis),	.	.	132	4	7	2	18	4	5	2	21	7	8	36	16
10. Metria (Puerperal Fever),	.	.	66	2	4	1	8	1	2	2	13	4	—	23	5
11. Carbuncle, .	.	.	4	—	—	—	1	—	—	—	1	—	—	1	1
12. Influenza, .	.	.	36	1	2	—	6	3	3	3	5	4	3	1	5
13. Dysentery, .	.	.	471	36	40	5	39	30	21	31	62	27	22	69	79
14. Diarrhoea, .	.	.	457	19	17	1	35	6	26	9	81	19	4	214	22
15. Cholera Infantum,	.	.	1,914	40	85	1	229	23	94	48	460	80	40	532	269
16. Cholera, .	.	.	107	7	13	—	18	2	8	5	13	4	3	20	14
17. Ague, .	.	.	11	—	—	—	3	2	—	1	—	2	—	2	1
18. Remittent Fever, .	.	.	6	—	—	1	1	—	—	—	—	1	1	1	1
19. Rheumatism, .	.	.	186	9	6	—	21	3	10	3	17	5	4	36	17

TABLE IX.—Continued.

CAUSES OF DEATH.	State.	Barnstable.	Berkshire.	Bristol.	Dukes and Kentucket.	Essex.	Franklin.	Hampden.	Hampshire.	Massachusetts.	Norfolk.	Plymouth.	Suffolk.	Worcester.
II.—2. Tubercular.														
Totals,	5,879	108	170	451	24	809	97	306	160	1,119	285	248	1,408	696
1.	105	-	2	4	2	7	1	1	1	81	8	5	32	11
2.	363	3	4	19	-	15	-	11	5	65	8	14	203	16
3.	5,008	102	156	411	22	742	93	278	160	923	246	221	1,040	619
4.	408	8	8	17	-	45	8	16	4	100	28	8	131	50
III.—1. Nervous System.														
Totals,	2,776	51	81	216	16	314	58	113	76	521	165	130	688	347
1. Cephalitis,	601	12	13	43	1	51	9	31	13	93	30	17	203	77
2. Apoplexy,	394	13	14	16	7	41	11	12	13	81	27	30	85	44
3. Paralysis,	630	13	30	53	5	82	20	26	12	119	45	45	86	94
4. Insanity,	108	2	1	9	-	12	1	4	7	12	4	5	28	13
5. Chorea,	1	-	-	-	-	-	-	-	-	-	-	-	1	-
6. Epilepsy,	134	3	2	18	-	8	4	10	8	31	6	5	16	23
7. Tetanus,	19	-	-	2	1	-	1	2	-	4	1	1	5	2
8. Convulsions,	527	3	19	51	1	62	6	21	10	94	29	9	167	55
9. Brain Diseases, &c.,	367	5	2	19	1	53	6	7	13	67	23	13	94	34
Totals,	1,001	23	81	57	9	129	21	41	26	204	72	55	225	109
III.—2. Organs of Circulation.														
1. Pericarditis,	15	-	-	1	-	2	-	-	-	3	1	1	7	-
2. Aneurism,	8	-	-	-	-	-	-	-	-	2	-	-	6	-
3. Heart Diseases, &c.,	978	28	81	56	9	127	21	41	25	199	71	54	212	109

TABLE IX.—Continued.

CAUSES OF DEATH.		STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hamden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
III.—5. Urinary Organs.															
Totals,	.	392	9	12	19	2	28	5	12	6	74	20	18	142	45
1. Nephritis,	.	19	1	1	-	-	-	-	-	-	4	1	1	8	3
2. Ischuria,	.	3	-	-	1	-	-	-	-	-	1	-	-	1	-
3. Nephria (Bright's Disease),	.	140	1	3	1	-	4	-	3	1	26	3	3	79	16
4. Diabetes,	.	55	2	2	3	2	5	2	4	2	12	8	2	5	6
5. Calculus (Stone, Gravel, &c.),	.	20	1	-	1	-	5	1	-	-	2	-	1	5	4
6. Cystitis,	.	19	-	2	-	-	1	-	1	-	2	1	-	9	3
7. Kidney Diseases, &c.,	.	136	4	4	13	-	13	2	4	3	27	7	11	35	13
III.—6. Generative Organs.															
Totals,	.	40	-	2	1	-	3	1	1	1	10	-	1	17	3
1. Ovarian Dropsy,	.	17	-	1	-	-	2	-	-	1	4	-	-	8	1
2. Diseases of Uterus, &c.,	.	23	-	1	1	-	1	1	1	-	6	-	1	9	2
III.—7. Organs of Locomotion.															
Totals,	.	97	8	2	11	-	11	1	6	1	13	7	2	25	15
1. Arthritis,	.	2	-	-	-	-	-	1	-	-	-	-	-	1	-
2. Joint Disease, &c.,*	.	95	3	2	11	-	11	-	6	1	13	7	2	24	15
III.—8. Integumentary System.															
Totals,	.	78	-	4	8	-	6	-	4	-	11	5	2	32	6
1. Phlegmon,	.	60	-	4	6	-	5	-	1	-	9	4	2	24	5
2. Ulcer,	.	10	-	-	-	-	1	-	1	-	2	1	-	5	-
3. Skin Diseases, &c.,	.	8	-	-	2	-	-	-	2	-	-	-	-	3	1

TABLE IX.—Concluded.

CAUSES OF DEATH.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
V.—2. <i>Battle.</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—
V.—3. <i>Homicide.</i>	29	—	3	2	—	4	—	1	—	2	3	—	11	3
V.—4. <i>Suicide.</i>	91	1	6	3	—	7	1	6	—	13	6	4	28	16
V.—5. <i>Execution.</i>	—	—	—	—	—	—	—	—	—	—	—	—	—	—
V.—6. <i>Violent Deaths, not included above.*</i>	328	1	23	15	1	45	10	16	10	55	20	6	86	40
Sudden, cause unknown, . . .	26	1	5	5	—	—	—	1	1	5	1	3	—	4
Causes not specified,† . . .	1,324	32	82	113	16	153	39	84	53	273	86	65	149	179

* Returned as "Casualty."

† Including 83 from "Hemorrhage," 91 from "Tumor," and 49 from "Inflammation."

NOTE.—Where a person is "found drowned," the case is classed under "accident or negligence," (V.—1. 4.) Cases of death from cold, heat, drinking cold water, lightning, surgical operation, and exposure, are classed under "accident or negligence," (V.—1. 6.) As "stricture of the urethra" is almost invariably the result of gonorrhoea, it is classed as (I.; 2; 2.)—[Dr. FARR.]

TABLE X.—CAUSES OF DEATH.—COMPARATIVE MORTALITY.

Exhibiting the Number of Deaths from Specified Causes (Nosologically Arranged) during each of the Five Years 1866-67-68-69-70, with the Number of Deaths, annually, to 100,000 of the Population;—also the Number and Percentage of Deaths during the Five Years 1866-70, and during the entire Registration Period of Twenty-nine years and eight months, ending Dec. 31, 1870.

[Still-births included.]

DEATHS.					CAUSES OF DEATH.	DEATHS TO 100,000 POPULATION.				PERCENTAGE OF ALL DEATHS.	
1866.	1867.	1868.	1869.	1870.		1866.	1867.	1868.	1869.	1870.	Five Yrs. 1866-70.
											Twenty-nine Yrs. and Eight Mos. ending Dec. 31, '70.
21,633	23,779	26,653	27,118	28,348	All Causes, Specified Causes,*	1,937-44	1,854-56	2,069-33	1,874-79	1,945-17	-
24,166	23,301	25,189	25,712	26,968		1,892-67	1,817-48	1,855-66	1,775-68	1,832-54	100-00
					(CLASSES.)						
6,861	5,506	6,869	6,898	6,916	I.—ZYMOTIC DISEASES,	460-04	420-46	533-31	476-86	474-56	28-32
6,422	6,129	6,299	6,569	7,185	II.—CONSTITUTIONAL DIS.,	504-08	478-06	489-05	453-64	493-02	27-94
6,469	6,343	7,157	7,177	7,556	III.—LOCAL DISEASES,	507-78	494-76	555-67	495-63	518-47	28-06
4,378	4,432	3,865	4,027	4,206	IV.—DEVELOPMENTAL DIS.,	343-84	345-70	300-07	278-09	285-61	16-74
975	891	999	1,042	1,185	V.—VIOLENT DISEASES,	76-58	69-50	77-56	71-96	77-89	3-94
					(ORDERS.)						
5,770	5,410	6,698	6,724	6,770	I.—1.	452-90	421-98	520-08	464-85	464-54	25-04
20	36	48	39	47	2.	1-57	2-81	3-73	2-69	3-22	.15
54	47	108	122	90	3. Diabetic Diseases,	4-24	3-67	8-39	8-42	8-18	.84
17	13	15	13	9	4. Parasitic Diseases,	1-83	1-01	1-16	.90	.62	.05
1,092	1,046	1,142	1,173	1,306	II.—1. Diathetic Diseases,	85-71	81-59	88-66	81-00	89-62	4-80
5,330	5,083	5,157	5,396	5,879	2. Tubercular Disease,	418-37	398-47	400-39	372-64	403-40	21-42

* Including Stillborn.

TABLE X.—Continued.

DEATHS.					CAUSES OF DEATH.	DEATHS TO 100,000 POPULATION.					PERCENTAGE OF ALL DEATHS.			
1866.	1867.	1868.	1869.	1870.		Five Yrs. 1866-70	Twenty- nine Yrs. and Eight Mos. end'g Dec. 31, '70.	1866.	1867.	1868.	1869.	1870.	Five Yrs. 1866-70	Twenty- nine Yrs. and Eight Mos. end'g Dec. 31, '70.
2,334	2,286	2,605	2,576	2,776	12,577	47,836	III.—1. Nervous System, 2. 3. 4. 5. 6. 7. 8.	183.20	178.31	202.25	177.89	190.48	10.04	8.45
871	890	1,013	940	1,001	4,715	16,139		68.37	69.42	78.65	64.91	68.69	3.76	2.85
2,024	1,825	2,157	2,281	2,185	10,422	38,285		158.86	142.35	167.47	154.07	149.93	8.32	6.75
829	882	887	870	967	4,455	20,063		65.07	68.80	68.87	60.08	67.73	3.56	3.54
222	276	303	351	392	1,544	4,197		17.43	21.53	23.53	24.24	26.90	1.23	.74
31	41	46	29	40	187	470		2.43	3.20	3.57	2.00	2.74	.15	.08
83	78	83	90	97	481	1,814		6.52	8.08	8.44	6.22	6.66	.84	.92
75	65	63	90	78	371	1,886		5.89	5.07	4.89	6.22	5.85	.29	.33
2,686	2,771	1,958	2,085	2,118	11,598	58,013	IV.—1. Children, 2. Adults, 3. Old People, 4. Nutrition,	210.83	216.13	152.02	142.61	145.33	9.26	9.89
201	196	211	254	259	1,121	4,825		15.78	15.29	16.38	17.54	17.77	.89	.85
1,358	1,841	1,309	1,375	1,444	6,827	30,442		108.59	104.60	101.62	94.95	99.09	5.45	5.87
138	124	387	383	385	1,362	8,584		10.44	9.67	30.05	22.99	26.42	1.09	.63
594	532	610	615	687	8,038	11,746	V.—1. Accident or Negligence, 2. Battle, 3. Homicide, 4. Suicide, 5. Execution, 6. Viol't D'ths, not clas'd,	46.68	41.50	47.88	42.47	47.14	2.43	2.07
1	-	-	-	-	1	1,246		.08	-	-	-	-	-	.22
11	15	16	25	29	96	384		.86	1.17	1.24	1.73	1.99	.07	.07
73	75	88	92	91	419	2,048		5.73	5.85	6.83	6.85	6.24	.33	.36
-	-	2	1	-	8	9		-	-	.16	.07	-	-	-
296	269	288	309	328	1,485	6,884		28.23	20.98	21.97	21.34	22.51	1.19	1.22
18	25	31	23	26	123	651	Sudden (cause uncertain'd),		1.41	1.95	2.41	1.59	-	-
560	453	1,433	1,412	1,324	5,182	23,751	Causes not specified,		48.98	35.83	111.26	97.51	-	-

L—1. <i>Miasmatic.</i>														

TABLE X.—Continued.

DEATHS.					DEATHS TO 100,000 POPULATION.					PERCENTAGE OF ALL DEATHS.						
					CAUSES OF DEATH.					Five Yrs. 1866-70	Twenty- nine Yrs. and Eight Mos. end'g Dec. 31, '70.					
1866.	1867.	1868.	1869.	1870.	Five Yrs 1866-70	Twenty- nine Yrs. and Eight Mos. end'g Dec. 31, '70.						1866.	1867.	1868.	1869.	1870.
I.—3. <i>Dietic.</i>																
3	5	16	22	2	48	198	1. Privation, . . .	.24	.39	1.24	1.52	.14	.04	.03		
8	7	18	19	13	65	231	2. Purpura and Scurvy, . .	.63	.55	1.40	1.31	.89	.05	.04		
14	13	23	27	27	104	769	3. Del. Trem., { Alcoholism,	1.10	1.01	1.78	1.86	1.85	.08	.14		
29	22	51	54	48	204	1,672	4. Intemp'ce, }	2.27	1.72	3.97	3.73	3.30	.16	.30		
I.—4. <i>Parasitic.</i>																
2	1	2	4	1	10	337	1. Thrush, . . .	.16	.08	.15	.28	.07	.01	.06		
15	12	13	9	8	57	466	2. Worms, &c., . . .	1.17	.94	1.01	.62	.55	.04	.08		
II.—1. <i>Diathetic.</i>																
1	1	1	2	4	9	65	1. Gout, . . .	.08	.08	.08	.14	.27	.01	.01		
539	487	540	525	568	2,659	12,943	2. Dropsy and Anæmia, . .	42.31	37.98	41.92	36.25	38.98	2.12	2.28		
416	395	445	492	516	2,264	7,403	3. Cancer (& Can. of Stom'h)	32.65	30.81	34.55	33.98	35.41	1.81	1.31		
96	110	113	115	172	606	3,512	4. Noma (Canker), . . .	7.53	8.58	8.77	7.94	11.80	.48	.63		
40	53	43	39	46	221	1,154	5. Mortification, . . .	3.14	4.14	3.34	2.69	3.16	.18	.20		
II.—2. <i>Tubercular.</i>																
110	109	140	115	105	579	2,912	1. Scrofula, . . .	8.63	8.50	10.87	7.94	7.20	.46	.52		
232	179	243	263	363	1,280	5,566	2. Tabes Mesenterica, . .	18.21	13.96	18.87	18.17	24.91	1.02	.98		
4,600	4,362	4,437	4,659	5,003	28,061	113,914	3. Phthisis (Consumption), .	361.07	340.24	344.49	321.74	343.29	18.40	20.10		
388	438	387	359	408	1,925	10,796	4. Hydrocephalus, . . .	30.46	38.77	26.16	24.79	28.00	1.54	1.91		

III.—1. Nervous System.															
595	525	577	572	601	2,870	10,975	1. Cephalitis,	46.70	40.95	44.80	39.50	41.24	2.29	1.94	
261	281	311	331	394	1,578	5,587	2. Apoplexy,	20.49	21.92	24.15	22.86	27.04	1.26	.99	
487	469	630	607	630	2,823	9,663	3. Paralysis,	38.23	36.58	48.91	41.92	43.23	2.25	1.71	
106	111	91	87	103	498	1,452	4. Insanity,	8.32	8.66	7.07	6.01	7.07	.40	.26	
4	4	4	1	1	14	44	5. Chorea,	.31	.31	.31	.07	.07	.01	.01	
113	124	134	180	194	635	3,537	6. Epilepsy,	8.87	9.67	10.40	8.97	9.19	.51	.62	
13	14	14	18	19	78	333	7. Tetanus,	1.02	1.09	1.09	1.24	1.30	.06	.06	
465	477	499	479	527	2,447	10,260	8. Convulsions,	36.50	37.21	38.74	33.08	36.16	1.95	1.81	
290	281	345	351	367	1,634	5,985	9. Brain Diseases, &c.,	22.76	21.92	26.78	24.24	25.18	1.31	1.05	
III.—2. Organs of Circulat'n.															
20	13	24	19	15	91	259	1. Pericarditis,	1.57	1.01	1.86	1.31	1.03	.07	.04	
11	5	12	10	8	46	102	2. Aneurism,	.86	.39	.93	.69	.55	.04	.02	
840	872	977	911	978	4,578	15,778	3. Heart Diseases, &c.,	65.94	68.02	75.86	62.91	67.11	3.65	2.79	
III.—3. Respiratory Organs.															
—	1	—	1	—	2	9	1. Epistaxis,	—	.08	—	.07	—	—	—	
7	15	10	13	12	57	206	2. Laryngitis,	.55	1.17	.78	.90	.82	.05	.04	
202	208	241	239	259	1,149	2,743	3. Bronchitis,	15.85	16.22	18.71	16.51	17.77	.92	.43	
92	94	100	93	75	454	2,864	4. Pleurisy,	7.22	7.33	7.77	6.42	5.15	.36	.51	
1,639	1,378	1,651	1,736	1,718	8,122	30,048	5. Pneumonia,	128.65	107.49	128.18	119.88	117.89	6.48	5.30	
37	55	75	67	66	300	915	6. Asthma,	2.90	4.29	5.82	4.63	4.53	.24	.16	
47	74	80	82	55	338	1,450	7. Lung Diseases, &c.,	3.69	5.77	6.21	5.66	3.77	.27	.26	
III —4. Digestive Organs.															
63	79	81	54	90	367	1,182	1. Gastritis,	4.95	6.16	6.29	3.73	6.18	.29	.21	
240	255	252	225	288	1,260	6,105	2. Enteritis,	18.84	19.89	19.57	15.54	19.76	1.00	1.08	
65	77	67	72	86	367	907	3. Peritonitis,	5.10	6.01	5.20	4.97	5.90	.29	.16	
17	8	15	18	13	71	198	4. Ascites,	1.33	.62	1.16	1.24	.89	.06	.03	
23	17	24	25	14	103	237	5. Ulceration of Intestines,	1.81	1.33	1.86	1.73	.96	.08	.04	
80	31	29	45	39	174	601	6. Hernia,	2.35	2.42	2.25	3.11	2.68	.14	.10	
68	51	73	64	89	345	1,470	7. Ileus,	5.34	3.99	5.66	4.41	6.11	.28	.18	

TABLE X.—Continued.

DEATHS.						CAUSES OF DEATH.	DEATHS TO 100,000 POPULATION.					PERCENTAGE OF ALL DEATHS.		
					Five Yrs. 1866-70		Twenty- nine Yrs. and Eight Mos. end'g Dec. 31, '76.	1866.	1867.	1868.	1869.	1870.	Five Yrs. 1866-70	Twenty- nine Yrs. and Eight Mos. end'g Dec. 31, '76.
1866.	1867.	1868.	1869.	1870.										
III.—4. Digest. Organs—Con.														
5	6	4	9	3	27	138	8. Intussusception, .	.39	.47	.31	.62	.21	.02	.02
1	3	5	7	11	27	29	9. Stricture of Intestines, .	.08	.23	.39	.48	.75	.02	—
2	6	1	2	4	15	37	10. Fistula, .	.16	.47	.08	.14	.27	.01	—
83	112	103	93	89	480	4,276	11. Stomach Diseases, &c., .	6.51	8.74	8.00	6.42	6.11	.38	.76
1	—	—	—	—	1	3	12. Pancreas Disease, &c., .	.08	—	—	—	—	—	—
53	46	38	37	33	207	536	13. Hepatitis, .	4.16	3.59	2.95	2.56	2.27	.17	.09
31	46	34	45	34	190	883	14. Jaundice, .	2.43	3.59	2.64	3.11	2.33	.15	.16
146	143	159	173	194	815	3,436	15. Liver Diseases, &c., .	11.46	11.15	12.35	11.95	13.31	.65	.61
1	2	2	1	—	6	25	16. Spleen Disease, &c., .	.08	.15	.16	.07	—	.01	—
III.—5. Urinary Organs.														
15	14	22	13	19	83	219	1. Nephritis, .	1.18	1.09	1.71	.90	1.30	.07	.04
3	2	6	8	3	22	88	2. Ischuria, .	.24	.15	.46	.56	.21	.02	.01
34	54	76	125	140	429	571	3. Nephria (Bright's Dis.), .	2.67	4.21	5.90	8.63	9.61	.34	.10
31	55	43	50	55	234	842	4. Diabetes, .	2.43	4.29	3.35	3.45	3.78	.19	.15
20	24	20	30	20	114	558	5. Calculus (Gravel, &c.), .	1.57	1.88	1.55	2.07	1.37	.09	.10
28	21	20	18	19	106	232	6. Cystitis, .	2.20	1.64	1.55	1.24	1.30	.08	.04
91	106	116	107	136	556	1,687	7. Kidney Diseases, &c., .	7.14	8.27	9.01	7.39	9.33	.44	.30
III.—6. Generative Organs.														
12	16	23	15	17	83	217	1. Ovarian Dropsy, .	.94	1.25	1.78	1.03	1.16	.07	.04
19	25	23	14	23	104	253	2. Uterus Disease, &c., .	1.49	1.95	1.78	.97	1.58	.08	.04

TABLE X.—Concluded.

DEATHS.					CAUSES OF DEATH.	DEATHS TO 100,000 POPULATION.					PERCENTAGE OF ALL DEATHS.			
1870.						Five Yrs. 1866-70	Twenty- nine Yrs. and Eight Mos. end'g Dec. 31, '70.	1866.	1867.	1868.	1869.	1870.	Five Yrs. 1866-70	Twenty- nine Yrs. and Eight Mos. end'g Dec. 31, '70.
134	136	157	168	178	V.—1. <i>Accid't or Negligence.</i> 1. Fractures and Contusions,* 2. Burns and Scalds, . . . 3. Poison, . . . 4. Drowning, . . . 5. Suffocation, . . . 6. Otherwise, . . .	773	11746	10.52	10.61	12.19	11.80	12.21	.62	2.07
96	75	70	83	89		7.54		6.85	5.43	5.73	6.11	.33		
24	23	25	26	28		1.88		1.79	1.94	1.80	1.78	.10		
222	247	231	283	308		17.42		19.27	17.94	19.54	21.00	1.03		
28	18	29	30	27		2.20		1.40	2.25	2.07	1.85	.10		
90	83	98	25	61		7.07		2.58	7.61	1.73	4.19	.25		
1	—	—	—	—	V.—2. <i>Battle.</i>	1	1,246	.08	—	—	—	—	.22	
11	15	16	25	29	V.—3. <i>Homicide.</i>	96	384	.86	1.17	1.24	1.73	1.99	.07	
73	75	88	92	91	V.—4. <i>Suicide.†</i>	419	2,048	5.73	5.85	6.83	6.35	6.24	.33	
—	—	2	1	—	V.—5. <i>Execution.</i>	3	9	—	—	.16	.07	—	—	
296	269	283	309	328	V.—6. <i>Viol't Deaths, not clas'd.</i>	1,485	6,884	23.23	20.98	21.97	21.34	22.51	1.19	1.22
18	25	31	23	28	Sudden, cause unascertained,	193	UNI	1.41	1.95	2.41	1.59	1.78	—	—
560	453	1,433	1,412	1,324	Causes not specified,‡	5,182	23,751	43.96	35.33	111.26	97.51	90.85	—	—

* Including "Railroad Accidents."

† Totals; manner not stated.

‡ Including deaths from "Hemorrhage," "Tumor," and "Inflammation."

NOTE.

Previously to the adoption, in the Registration Report of 1855, of the present NOSOLOGICAL ARRANGEMENT of Tables IX. and X., the term "Infantile" in those Tables included, under a single designation, not only all deaths returned under the several heads "Infantile," "Premature," or "Premature Births," but also all ascribed to "Debility" or "Unknown" causes, if under two years of age.

This plan was continued until the Registration Report of 1868, in which, to secure greater accuracy, the method now employed was adopted, by which Deaths returned under the head of "Premature," "Premature Births," or "Infantile," are stated *separately* in Table VIII. and *combined* in Tables IX. and X. Deaths of children under two years, from "Debility" or "Unknown" cause, are no longer classed as "Infantile."

See Registration Report of 1868, p. cv., for a fuller explanation.

TABLE XI.—OCCUPATIONS.

Distinguishing by Occupations (statistically classified) the Number, with their Average and Aggregate Ages, of Persons in the State (in two geographical divisions) whose Occupations were specified, and whose Deaths were registered, during the year 1870;—also in the State (entire) during the period of Twenty-seven Years and Eight Months, ending with December 31, 1870.

[This Table includes only persons over twenty years of age.*]

OCCUPATIONS.	NINE EASTERN COUNTIES, 1870.			FIVE WESTERN COUNTIES, 1870.			WHOLE STATE, Twenty-seven Years and Eight Mos. From May 1, 1843, to Dec. 31, 1870.		
	Number of Persons.	Ages.		Number of Persons.	Ages.		Number of Persons.	Ages.	
		Aggregate.	Average.		Aggregate.	Average.		Aggregate.	Average.
ALL CLASSES AND OCCUPATIONS, . . .	4,612	236,485	51.29	1,646	87,896	53.34	115,922	5,897,081	50.87
I. CULTIVATORS OF THE EARTH, . . .	569	39,146	68.79	560	36,693	65.52	27,068	1,759,353	64.99
II. ACTIVE MECHANICS ABROAD, . . .	378	20,102	53.18	102	5,872	57.57	8,547	449,126	52.54
III. ACTIVE MECHANICS IN SHOPS, . . .	565	27,471	48.62	234	10,949	46.79	12,783	612,331	47.90
IV. INACTIVE MECHANICS IN SHOPS, . . .	591	26,470	44.79	156	7,308	46.81	13,594	590,904	43.46
V. LABORERS—No SPECIAL TRADES, . . .	1,052	51,231	48.69	279	13,137	47.08	22,209	1,044,625	47.04
VI. FACTORS LABORING ABROAD, . . .	168	7,301	43.45	46	1,821	39.59	5,802	203,880	35.14
VII. EMPLOYED ON THE OCEAN, . . .	283	15,087	53.31	4	152	38.00	7,376	338,859	45.94
VIII. MERCHANTS, FINANCIERS, AGENTS, &c., . . .	734	36,575	49.83	141	6,440	45.67	12,138	597,559	49.23
IX. PROFESSIONAL MEN, . . .	135	6,450	47.78	61	3,153	51.69	4,171	211,581	50.72
X. FEMALES, . . .	187	6,652	48.55	63	2,876	37.71	2,234	88,863	39.77

I. CULTIVATORS OF THE EARTH,

1870.]

II. ACTIVE MECHANICS ABROAD,

Brickmakers,	589	39,146	68-78	560	39,693	65-52	27,068	1,759,353	64-99
Carpenters and Joiners,	378	20,102	53-18	102	5,872	57-57	8,547	449,126	52-54
Canlkers and Gravers,	1	49	49-00	-	-	-	82	8,966	48-36
Masons,	205	10,894	53-14	70	3,979	56-84	4,818	257,489	53-00
Millwrights,	7	376	53-71	-	-	-	153	8,951	58-49
Riggers,	65	3,365	51-77	12	725	60-41	1,263	63,678	50-41
Ship-carpenters,	1	75	75-00	2	123	61-50	100	5,784	57-81
Slaters,	5	282	56-40	-	-	-	134	6,914	51-59
Stonecutters,	40	2,506	62-65	-	-	-	730	42,184	57-79
Tanners,	5	194	38-80	-	-	-	43	1,759	40-91
	42	2,030	48-33	14	822	58-71	739	84,510	46-69
	7	331	47-29	4	223	55-75	485	23,891	49-26

III. ACTIVE MECHANICS IN SHOPS,

Bakers,	565	27,471	48-62	234	10,949	46-41	12,783	612,331	47-90
Blacksmiths,	23	1,088	47-30	-	-	-	381	17,609	46-22
Brewers,	61	3,557	58-31	23	1,342	58-35	1,977	105,232	53-21
Cabinet-makers,	2	65	32-50	-	-	-	22	1,060	48-18
Calico-printers,	26	1,099	42-27	6	260	43-33	601	29,263	48-68
Card-makers,	-	-	-	-	-	-	9	469	52-11
Carriage-makers and trimmers,	1	67	67-00	-	-	-	35	1,619	46-26
Chair-makers,	9	457	50-78	5	271	54-20	210	10,382	49-44
Clothiers,	2	97	48-50	7	229	52-71	101	4,158	41-16
Confectioners,	-	-	-	4	267	66-75	73	4,239	58-07
Cooks,	5	243	48-60	1	24	24-00	63	2,704	43-71
Coopers,	5	208	41-60	3	105	35-00	86	3,411	39-66
Coppersmiths,	24	1,487	61-96	4	323	80-75	794	47,255	59-51
	2	95	47-50	-	-	-	78	3,661	46-92

* Soldiers and females excepted.

OCCUPATIONS.

TABLE XI.—Continued.

OCCUPATIONS.	NINE EASTERN COUNTIES, 1870.			FIVE WESTERN COUNTIES, 1870.			WHOLE STATE, Twenty-seven Years and Eight Mos. From May 1, 1843, to Dec. 31, 1870.			
		Number of Persons.	AGES.		Number of Persons.	AGES.		Number of Persons.	AGES.	
			Aggregate.	Average.		Aggregate.	Average.		Aggregate.	Average.
Curriers,	29	1,130	38.97	—	—	—	211	8,805	41.73	
Cutlers,	1	25	25.00	7	335	47.85	103	4,076	39.75	
Distillers,	3	176	58.67	—	—	—	27	1,585	58.70	
Dyers,	4	201	50.25	2	79	39.50	116	5,105	44.00	
Founders,	5	282	56.40	2	91	45.50	244	10,483	42.96	
Furnace-men,	16	676	42.25	6	170	28.33	111	4,640	41.80	
Glass-blowers,	4	173	43.25	—	—	—	109	4,122	37.81	
Gunsmiths,	—	—	—	10	624	62.40	239	11,649	48.74	
Hatters,	10	566	56.60	3	179	59.66	296	16,327	55.16	
Leather-dressers,	15	690	46.00	—	—	—	128	5,960	46.56	
Machinists,	65	2,988	45.97	27	1,037	38.41	1,572	64,002	40.71	
Millers,	8	367	45.88	6	247	41.16	234	13,547	57.89	
Musical Instrument-makers,	—	—	—	2	109	54.50	17	797	46.88	
Nail-makers,	6	342	57.00	—	—	—	151	6,170	40.86	
Pail and Tub-makers,	—	—	—	—	—	—	4	158	39.50	
Painters,	87	3,729	42.87	22	1,022	46.45	1,353	61,529	45.48	
Paper-makers,	3	165	55.00	10	527	52.70	225	10,703	47.57	
Pianoforte-makers,	6	320	53.33	2	90	45.00	82	3,493	42.59	
Plumbers,	6	215	35.83	—	—	—	83	3,010	36.26	
Potters,	—	—	—	—	—	—	34	1,961	57.67	
Pump and Block-makers,	3	201	67.00	—	—	—	75	4,227	56.36	
Reed-makers,	—	—	—	—	—	—	9	385	42.78	
Rope-makers,	11	707	64.27	—	—	—	221	12,883	57.84	
Tallow-chandlers,	2	98	49.00	—	—	—	61	8,358	55.05	

Tinsmiths,	11	440	40-00	7	818	45-43	300	12,255	40 85
Trunk-makers,	2	108	54-00	-	-	-	36	1,451	40-31
Upholsterers,	6	283	47-16	1	37	37-00	92	3,639	39-55
Weavers,	3	195	65-00	13	623	47-92	328	14,954	45-59
Wheelwrights,	15	956	63-73	5	314	62-80	427	24,023	56-26
Wood-turners,	6	290	48-33	-	-	-	57	2,939	51-56
Mechanics (trade not specified),	78	3,685	47-24	56	2,326	41-54	1,408	63,033	44-77
IV. INACTIVE MECHANICS IN SHOPS,	591	26,470	44-79	156	7,308	46-81	13,594	590,904	43-46
Barbers,	17	722	45-41	2	82	41-00	285	11,682	40-99
Basket-makers,	2	121	60-50	-	-	-	63	3,974	63-08
Book-binders,	7	232	33-14	2	130	65-00	118	4,697	39 80
Brush-makers,	1	48	48-00	2	104	52-00	42	1,808	43-05
Carvers,	3	98	32-67	-	-	-	67	2,235	33-35
Cigar-makers,	9	376	41-78	2	65	32-50	113	4,274	37-82
Clock and Watch-makers,	-	-	-	1	83	83-00	67	3,857	57-56
Comb-makers,	-	-	-	4	265	66-25	112	5,655	50-49
Engravers,	6	263	43-83	1	58	58-00	91	3,661	40-23
Glass-cutters,	7	340	48-57	-	-	-	50	2,191	43-82
Harness-makers,	16	734	45-87	4	218	54-50	334	16,012	47-94
Jewellers,	23	1,012	44-00	6	277	46-16	363	14,888	41-00
Operatives,	104	4,104	39-46	33	1,369	41-48	1,436	55,780	38-84
Printers,	27	910	33-70	2	59	29-50	543	20,669	38-06
Sail-makers,	12	674	56-17	-	-	-	179	9,300	51-95
Shoe-cutters,	18	760	42-22	-	-	-	244	10,150	41-59
Shoemakers,	272	12,792	47-03	77	3,528	45-82	8,022	352,593	43-95
Silversmiths,	2	91	45-50	1	48	48-00	72	3,337	46-34
Tailors,	57	2,847	49-94	10	587	58-70	1,153	53,063	46-02
Tobacconists,	2	100	50-00	-	-	-	40	2,020	50-50
Whip-makers,	-	-	-	7	887	52-28	81	3,399	41-96
Wool-sorters,	6	246	41-00	2	43	21-50	119	5,659	47-58

TABLE XI.—Continued.

OCCUPATIONS.	NINE EASTERN COUNTIES, 1870.			FIVE WESTERN COUNTIES, 1870.			WHOLE STATE, Twenty-seven Years and Eight Mos. From May 1, 1843, to Dec. 31, 1870.		
	Number of Persons.	AGES.		Number of Persons.	AGES.		Number of Persons.	AGES.	
		Aggregate.	Average.		Aggregate.	Average.		Aggregate.	Average.
V.—LABORERS—No Special Trades, . . .	1,052	51,231	48.69	279	13,137	47.08	22,209	1,044,625	47.04
Laborers, . . .	1,015	49,591	48.86	275	12,961	47.13	21,690	1,021,637	47.10
Servants, . . .	25	978	39.12	—	—	—	298	12,166	40.82
Stevedores, . . .	5	256	51.20	—	—	—	67	3,508	52.35
Watchmen, . . .	7	406	58.00	3	134	44.66	136	6,600	48.53
Workmen in powder-mills, . . .	—	—	—	1	42	42.00	18	714	39.66
VI. FACTORS LABORING ABROAD, &C., . . .	168	7,301	43.45	46	1,821	39.59	5,802	203,880	35.14
Baggage-masters, . . .	1	27	27.00	—	—	—	27	866	32.07
Brakemen, . . .	4	139	34.75	7	193	27.57	142	3,914	27.57
Butchers, . . .	15	794	52.93	6	262	43.66	400	20,102	50.25
Chimney-sweepers, . . .	—	—	—	—	—	—	4	138	34.50
Drivers, . . .	17	699	41.12	3	120	40.00	228	9,126	40.02
Drovers, . . .	1	27	27.00	—	—	—	15	736	49.06
Engineers and Firemen, . . .	27	1,114	41.27	10	372	37.20	374	14,145	37.82
Expressmen, . . .	12	502	41.83	2	71	35.50	160	6,463	40.89
Ferrymen, . . .	—	—	—	—	—	—	9	484	53.77
Light-house keepers, . . .	—	—	—	—	—	—	9	531	59.00
Peddlers, . . .	13	582	44.77	6	233	38.33	803	13,441	44.86
Sextons, . . .	2	102	51.00	1	75	75.00	59	3,472	58.84
Soldiers, . . .	10	349	34.90	2	50	25.00	2,864	81,045	28.29

Stablers,	10	498	49-80	1	50	50-00	268	11,086	42-15
Teamsters,	55	2,417	43-94	7	363	51-86	906	36,284	39-99
Weighers and Gaugers,	1	51	51-00	1	82	32-00	18	1,058	58-57
Wharfingers,	-	-	-	-	-	-	21	1,039	49-48
VII. EMPLOYED ON THE OCEAN,	283	15,087	53-31	4	152	38-00	7,876	338,859	45-94
Fishermen,	23	1,056	45-91	-	-	-	279	11,983	42-95
Marines,	-	-	-	-	-	-	4	165	41-25
Naval Officers,	-	-	-	-	-	-	40	1,918	47-95
Pilots,	2	157	78-50	-	-	-	69	4,124	59-76
Seamen,	258	13,874	53-42	4	152	38-00	6,984	320,669	45-91
VIII. MERCHANTS, FINANCIERS, AGENTS, &c.,	734	36,575	49-83	141	6,440	45-67	12,138	597,559	49-23
Agents,	20	888	24-40	12	642	53-50	184	8,879	48-25
Bankers,	3	191	63-66	1	65	65-00	36	2,099	58-30
Bank Officers,	17	722	42-48	3	124	41-33	115	6,069	52-77
Boarding-house keepers,	-	-	-	-	-	-	52	2,442	46-96
Booksellers,	5	306	61-20	-	-	-	69	3,681	53-35
Brokers,	11	568	51-64	-	-	-	150	7,296	48-64
Clerks and Book-keepers,	194	6,122	31-56	34	1,135	33-38	2,471	91,654	37-09
Druggists and Apothecaries,	13	643	49-46	2	119	59-50	172	7,205	42-00
Gentlemen,	55	4,055	73-64	5	364	72-80	1,220	83,246	68-23
Grocers,	31	1,473	47-51	3	126	42-00	371	17,713	47-74
Inn-keepers,	13	649	49-92	6	212	35-33	386	19,095	49-73
Manufacturers,	59	3,005	50-94	21	1,096	52-19	1,079	53,863	49-92
Merchants,	161	10,318	64-09	35	1,660	47-43	3,090	166,259	53-85
News-dealers or Carriers,	-	-	-	-	-	-	14	610	48-57
Railroad Agents and Conductors,	11	383	34-45	9	426	47-33	231	9,245	40-02
Saloon and Restaurant keepers,	10	443	44-30	3	184	61-33	190	7,957	41-88

TABLE XI.—Concluded.

OCCUPATIONS.	NINE EASTERN COUNTIES, 1870.			FIVE WESTERN COUNTIES, 1870.			WHOLE STATE, Twenty-seven Years and Eight Mos. From May 1, 1843, to Dec. 31, 1870.		
	Number of Persons.	Ages.		Number of Persons.	Ages.		Number of Persons.	Ages.	
		Aggregate.	Average.		Aggregate.	Average.		Aggregate.	Average.
Stove-dealers,	1	53	53.00	—	—	—	12	543	45.25
Telegraphers,	—	—	—	—	—	—	4	119	29.75
Traders,	130	6,756	51.97	7	287	41.00	2,292	109,584	47.81
IX. PROFESSIONAL MEN, &C.,	135	6,450	47.78	61	3,153	51.69	4,171	211,581	50.72
Architects,	1	20	20.00	—	—	—	15	784	52.28
Artists,	10	398	39.80	4	162	40.50	136	6,066	44.60
Civil Engineers,	—	—	—	3	121	40.33	93	3,854	41.44
Clergymen,	28	1,849	66.04	14	748	53.43	771	44,892	58.22
Comedians,	—	—	—	—	—	—	28	1,006	35.93
Dentists,	6	280	46.67	2	71	35.50	93	3,836	41.24
Editors,	5	263	52.60	—	—	—	49	2,214	45.19
Judges and Justices,	—	—	—	1	54	54.00	16	1,049	65.66
Lawyers,	15	899	89.89	7	424	60.57	565	31,849	56.37
Musicians,	10	488	48.80	5	232	46.40	198	8,158	41.20
Photographers,	—	—	—	—	—	—	3	130	43.33
Physicians,	23	397	17.26	14	837	59.78	970	53,658	55.31
Professors,	2	66	33.00	1	48	48.00	84	1,866	54.88
Public Officers,	14	746	54.57	2	114	57.00	376	20,611	54.81
Sheriffs, Constables, and Policemen,	8	430	53.75	1	51	51.00	94	5,116	54.42
Students,	3	70	23.33	8	65	21.66	236	5,542	23.48
Surveyors,	—	—	—	1	91	91.00	69	3,618	52.48
Teachers,	10	544	54.40	8	135	45.00	425	17,332	40.78

X. FEMALES,	.	.	.	.	.	.	137	6,652	48.55	63	2,376	37.71	2,234	88,868	89.77
Domestics,	.	.	.	.	.	.	95	4,770	50.21	10	281	28.10	515	24,392	47.36
Dressmakers,	.	.	.	.	.	.	5	183	36.60	4	202	50.50	187	7,892	42.20
Milliners, .	.	.	.	.	.	.	1	20	20.00	1	33	33.00	100	3,873	38.73
Nurses, .	.	.	.	.	.	.	10	643	64.30	5	231	46.20	86	5,223	60.73
Operatives,	.	.	.	.	.	.	4	219	54.75	15	516	34.40	517	14,684	28.40
Seamstresses,	.	.	.	.	.	.	4	209	52.25	9	425	47.22	236	11,018	46.68
Shoe-binders,	.	.	.	.	.	.	-	-	-	-	-	-	37	1,622	43.83
Straw-workers,	.	.	.	.	.	.	-	-	-	2	49	24.50	60	2,122	35.37
Tailoresses,	.	.	.	.	.	.	3	135	45.00	3	167	55.66	183	8,413	45.97
Teachers, .	.	.	.	.	.	.	15	473	31.53	14	472	33.71	311	9,582	30.81
Telegraphers,	.	.	.	.	.	.	-	-	-	-	-	-	2	42	21.00

TABLE XII.—GENERAL ABSTRACT

Exhibiting the Number of Births, Marriages, and Deaths, registered Years, 1865–70,—in connection with the Population, accord- of Children Born and of Persons who died;—also showing the Deaths, to the given Population.

THE STATE AND COUNTIES.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
MASSACHUSETTS,	1,457,351	209,989	107,856	101,805	328	2.40	42
BARNSTABLE, . .	32,774	4,413	2,267	2,119	27	2.24	45
BERKSHIRE, . .	64,827	9,226	4,841	4,366	19	2.37	42
BRISTOL, . . .	102,886	14,338	7,445	6,852	41	2.32	43
DUKES, . . .	3,787	382	187	192	3	1.68	60
ESSEX, . . .	200,843	27,149	14,161	12,937	51	2.25	44
FRANKLIN, . .	32,635	3,697	1,897	1,794	6	1.89	53
HAMPDEN, . .	78,409	11,158	5,706	5,433	19	2.37	42
HAMPSHIRE, . .	44,388	5,808	3,028	2,772	8	2.18	46
MIDDLESEX, . .	274,353	38,426	19,658	18,713	55	2.33	43
NANTUCKET, . .	4,123	318	178	139	1	1.28	78
NORFOLK, . .	89,443	16,224	8,214	7,976	34	3.02	33
PLYMOUTH, . .	65,365	8,897	4,606	4,276	15	2.27	44
SUFFOLK, . . .	270,802	42,151	21,456	20,689	6	2.60	39
WORCESTER, . .	192,716	27,802	14,212	13,547	43	2.40	41

FOR THE SIX YEARS—1865-70.

*in the several Counties and Towns of Massachusetts, for the Six
ing to the United States Census of 1870,—distinguishing the Sex
Ratios of the annual average number of Births, Marriages, and*

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
85,333	·98	102	151,547	75,383	75,920	244	1·74	58
1,992	1·01	99	3,097	1,580	1,497	20	1·57	63
3,415	·88	114	5,753	2,919	2,804	30	1·48	68
5,703	·93	108	10,539	5,238	5,286	15	1·71	59
201	·88	113	873	199	174	—	1·64	61
11,962	·99	101	19,880	9,742	10,100	38	1·65	61
1,721	·88	114	3,102	1,446	1,647	9	1·58	63
4,811	1·02	98	7,959	4,002	3,943	14	1·69	59
2,576	·97	103	4,103	1,979	2,108	16	1·54	65
14,526	·88	113	27,671	13,510	14,138	23	1·68	60
255	1·03	97	580	276	304	—	2·34	43
4,974	·93	108	10,359	5,047	5,294	18	1·93	52
3,434	·88	114	6,664	3,350	3,295	19	1·70	59
19,165	1·18	85	32,365	16,526	15,832	7	2·00	50
10,598	·92	109	19,102	9,569	9,498	35	1·65	61

TABLE XII.—General Abstract

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
BARNSTABLE Co.,	32,774	4,413	2,267	2,119	27	2.24	45
Barnstable, . . .	4,793	478	215	252	11	1.66	60
Brewster, . . .	1,259	161	98	63	—	2.13	47
Chatham, . . .	2,411	369	182	187	—	2.55	39
Dennis, . . .	3,269	458	221	237	—	2.34	43
Eastham, . . .	668	81	47	34	—	2.02	49
Falmouth, . . .	2,237	198	101	96	1	1.47	68
Harwich, . . .	3,080	473	263	208	2	2.56	39.
Mashpee,* . . .	348	4	2	2	—	1.14	87
Orleans, . . .	1,323	170	83	87	—	2.14	47
Provincetown, . . .	3,865	671	360	310	1	2.89	35
Sandwich, . . .	3,694	565	301	264	—	2.55	39
Truro, . . .	1,269	200	92	108	—	2.62	38
Wellfleet, . . .	2,135	288	135	141	12	2.25	44
Yarmouth, . . .	2,423	297	167	130	—	2.04	49
BERKSHIRE COUNTY,	64,827	9,226	4,841	4,366	19	2.37	42
Adams, . . .	12,090	1,967	1,031	930	6	2.71	37
Alford, . . .	430	51	28	28	—	1.98	51
Becket, . . .	1,346	168	86	80	2	2.08	48
Cheshire, . . .	1,758	239	117	121	1	2.27	44
Clarksburg, . . .	686	78	37	41	—	1.89	53
Dalton, . . .	1,252	167	87	80	—	2.23	45
Egremont, . . .	931	88	39	49	—	1.59	63
Florida, . . .	1,322	202	108	93	1	2.54	39
Great Barrington, . . .	4,320	547	290	257	—	2.11	47
Hancock, . . .	882	64	35	29	—	1.20	83
Hinsdale, . . .	1,695	293	157	136	—	2.88	34
Lanesborough, . . .	1,393	275	138	137	—	3.29	30
Lee, . . .	3,866	586	307	279	—	2.52	39
Lenox, . . .	1,965	296	156	140	—	2.51	40
Monterey, . . .	653	74	31	42	1	1.89	53
Mt. Washington, . . .	256	11	5	6	—	.73	137
New Ashford, . . .	208	31	17	14	—	2.48	40
New Marlborough, . . .	1,855	287	165	122	—	1.36	74
Otis, . . .	960	85	48	37	—	1.48	68
Peru, . . .	455	60	33	27	—	2.20	45
Pittsfield, . . .	11,112	1,717	894	821	2	2.58	39
Richmond, . . .	1,091	112	49	63	—	1.71	58
Sandisfield, . . .	1,482	110	52	58	—	1.24	81
Savoy, . . .	861	100	55	45	—	1.94	52
Sheffield, . . .	2,535	427	239	186	2	2.81	36
Stockbridge, . . .	2,003	195	106	89	—	1.62	62
Tyringham, . . .	557	104	52	52	—	3.11	32

* One year only. Incorporated 1870.

1870.]

GENERAL ABSTRACT.

cxvii.

for Six Years—Continued.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
1,992	1.01	99	3,097	1,580	1,497	20	1.57	63
260	.90	110	335	148	186	1	1.17	86
76	1.01	99	139	69	70	—	1.85	54
138	.95	105	223	110	112	1	1.55	65
216	1.10	91	303	150	150	3	1.55	65
35	.87	114	62	37	25	—	1.55	65
102	.76	132	211	116	95	—	1.57	64
277	1.50	67	273	139	131	3	1.48	68
1	.29	348	8	1	7	—	2.30	44
96	1.21	83	181	90	91	—	2.28	44
286	1.23	81	343	195	147	1	1.48	68
217	.98	102	414	234	179	1	1.87	54
66	.87	115	134	69	65	—	1.76	57
112	.88	114	246	117	125	4	1.92	52
110	.76	132	225	105	114	6	1.55	65
3,415	.88	114	5,753	2,919	2,804	30	1.48	68
761	1.05	95	1,068	552	516	—	1.26	79
21	.81	123	54	33	21	—	2.08	48
61	.76	132	100	42	58	—	1.23	81
90	.85	117	111	54	55	2	1.05	95
17	.41	242	38	22	16	—	.92	108
67	.89	112	114	55	58	1	1.52	66
62	1.11	90	66	38	28	—	1.18	85
24	.30	333	117	79	37	1	1.47	68
236	.91	110	401	177	224	—	1.54	65
10	1.89	53	49	23	26	—	.92	108
105	1.03	97	170	86	84	—	1.67	60
61	.73	137	103	54	48	1	1.23	81
257	1.11	90	501	233	268	—	2.17	46
63	.53	187	137	67	68	2	1.16	86
42	1.07	93	71	37	34	—	1.82	55
6	.39	256	18	13	5	—	1.18	85
10	.80	125	11	8	3	—	.88	113
66	.59	169	147	82	65	—	1.33	76
52	.90	111	91	44	47	—	1.59	63
22	.81	124	63	28	34	1	2.31	43
681	1.02	98	1,025	520	495	10	1.54	65
29	.44	226	62	32	29	1	.94	106
79	.89	113	101	52	49	—	1.14	88
60	1.16	86	85	44	41	—	1.64	61
135	.88	113	291	145	145	1	1.92	52
106	.88	113	154	81	73	—	1.28	78
36	1.08	93	82	37	45	—	2.46	41

TABLE XII.—*General Abstract*

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
<i>Berkshire—Con.</i>							
Washington, . . .	694	51	29	22	—	1.21	82
West Stockbridge, . . .	1,924	315	163	152	—	2.73	37
Williamstown, . . .	3,559	467	249	214	4	2.19	46
Windsor, . . .	686	59	38	21	—	1.43	70
BRISTOL COUNTY, . .	102,886	14,338	7,445	6,852	41	2.32	43
Acushnet, . . .	1,132	149	86	63	—	2.19	46
Attleborough, . . .	6,769	1,621	808	806	7	4.00	25
Berkley, . . .	744	55	30	25	—	1.23	81
Dartmouth, . . .	3,367	417	209	208	—	2.07	48
Dighton, . . .	1,817	286	147	131	8	2.62	38
Easton, . . .	3,668	557	306	251	—	2.53	40
Fairhaven, . . .	2,626	240	128	112	—	1.52	66
Fall River, . . .	26,766	3,773	1,929	1,829	15	2.35	43
Freetown, . . .	1,372	116	58	55	3	1.41	71
Mansfield, . . .	2,432	302	144	158	—	2.07	48
New Bedford, . . .	21,320	2,655	1,341	1,313	1	2.08	48
Norton, . . .	1,821	184	108	75	1	1.68	59
Raynham, . . .	1,713	251	121	130	—	2.44	41
Rehoboth, . . .	1,895	191	111	80	—	1.68	60
Seekonk, . . .	1,021	81	52	28	1	1.32	76
Somerset, . . .	1,776	305	160	145	—	2.87	35
Swansey, . . .	1,294	189	106	83	—	2.43	41
Taunton, . . .	18,629	2,629	1,412	1,216	1	2.36	43
Westport, . . .	2,724	337	189	144	4	2.06	48
DUKES COUNTY, . .	3,787	382	187	192	3	1.68	60
Chilmark, . . .	476	74	35	36	3	2.59	39
Edgartown, . . .	1,516	165	78	87	—	1.81	55
Gay Head,* . . .	160	7	4	3	—	4.20	24
Gosnold, . . .	99	8	2	6	—	1.34	74
Tisbury, . . .	1,536	128	68	60	—	1.39	72
ESSEX COUNTY, . .	200,843	27,149	14,161	12,937	51	2.25	44
Amesbury, . . .	5,581	855	452	396	7	2.55	39
Andover, . . .	4,873	737	392	345	—	2.52	40
Beverly, . . .	6,507	856	452	404	—	2.19	46
Boxford, . . .	847	75	35	40	—	1.47	68
Bradford, . . .	2,014	193	99	93	1	1.60	63

* One year only. Incorporated 1870.

1870.]

GENERAL ABSTRACT.

cxix

for Six Years—Continued.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
17	·40	247	35	22	13	—	·83	120
58	·50	199	183	96	87	—	1·59	63
127	·60	168	264	135	119	10	1·23	81
54	1·32	76	41	28	13	—	1·00	100
5,703	·93	108	10,539	5,238	5,286	15	1·71	59
62	·91	110	112	60	52	—	1·65	61
367	·90	111	758	365	393	—	1·87	54
45	1·01	99	67	39	27	1	1·50	67
172	·85	117	358	188	170	—	1·77	56
114	1·04	96	157	60	94	3	1·44	69
77	·84	290	337	171	166	—	1·53	65
116	·73	136	277	135	139	3	1·76	57
1,483	1·15	87	2,918	1,442	1,476	—	1·82	55
67	·81	123	123	65	56	2	1·49	67
100	·68	146	253	110	143	—	1·73	58
1,547	1·20	83	2,283	1,124	1,157	2	1·78	56
66	·60	165	154	69	85	—	1·41	71
81	·78	128	154	75	79	—	1·50	67
89	·78	128	166	85	81	—	1·46	68
38	·62	161	79	45	34	—	1·29	77
77	·72	139	198	102	96	—	1·86	54
59	·76	132	144	76	68	—	1·86	54
1,030	·93	109	1,790	915	871	4	1·60	62
113	·69	145	211	112	99	—	1·29	77
201	·88	113	373	199	174	—	1·64	61
34	1·19	84	38	26	12	—	1·33	75
95	1·04	96	154	72	82	—	1·69	59
1	·62	160	2	—	2	—	1·23	80
3	·51	198	8	4	4	—	1·35	74
68	·73	136	171	97	74	—	1·85	54
11,962	·99	101	19,880	9,742	10,100	38	1·65	61
264	·79	127	578	290	286	2	1·73	58
251	·85	117	557	267	289	1	1·91	52
342	·88	114	570	269	301	—	1·46	68
35	·69	145	67	30	37	—	1·32	76
70	·58	171	159	74	85	—	1·31	76

TABLE XII.—General Abstract

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
Essex—Con.							
Danvers, . . .	5,600	890	471	418	6	2.64	38
Essex, . . .	1,614	206	107	95	4	2.13	47
Georgetown, . . .	2,088	191	95	96	—	1.53	66
Gloucester, . . .	15,389	2,651	1,394	1,251	6	2.87	35
Groveland, . . .	1,776	272	135	137	—	2.55	39
Hamilton, . . .	790	78	37	41	—	1.64	61
Haverhill, . . .	13,092	1,704	908	793	3	2.17	46
Ipswich, . . .	3,720	381	192	188	1	1.70	59
Lawrence, . . .	28,921	4,485	2,293	2,189	3	2.58	39
Lynn, . . .	28,233	3,961	2,016	1,936	9	2.34	43
Lynnfield, . . .	818	94	49	45	—	1.92	52
Manchester, . . .	1,665	248	134	114	—	2.48	40
Marblehead, . . .	7,703	1,300	690	610	—	2.82	36
Methuen, . . .	2,959	367	178	189	—	2.08	48
Middleton, . . .	1,010	108	58	50	—	1.78	56
Nahant, . . .	475	79	43	36	—	2.77	36
Newbury, . . .	1,430	178	95	83	—	2.07	48
Newburyport, . . .	12,595	1,803	1,080	769	4	2.38	42
North Andover, . . .	2,549	345	174	170	1	2.25	44
Peabody, . . .	7,343	1,159	610	549	—	2.63	38
Rockport, . . .	3,904	640	320	319	1	2.73	37
Rowley, . . .	1,157	133	59	73	1	1.92	52
Salem, . . .	24,117	1,605	851	754	—	1.11	90
Salisbury, . . .	3,776	551	265	285	1	2.43	41
Saugus, . . .	2,247	235	104	128	3	1.75	57
Swampscott, . . .	1,846	279	153	126	—	2.52	40
Topsfield, . . .	1,213	129	77	52	—	1.77	56
Wenham, . . .	985	122	60	62	—	2.06	48
West Newbury, . . .	2,006	239	133	106	—	1.99	50
FRANKLIN COUNTY, .							
Ashfield, . . .	1,180	124	63	60	1	1.78	57
Bernardston, . . .	961	118	58	60	—	2.05	49
Buckland, . . .	1,946	316	165	150	1	2.71	37
Charlemont, . . .	1,005	75	41	34	—	1.24	80
Coleraine, . . .	1,742	167	88	79	—	1.60	63
Conway, . . .	1,460	186	103	83	—	2.12	47
Deerfield, . . .	3,632	571	299	272	—	2.62	38
Erving, . . .	579	54	23	31	—	1.56	64
Gill, . . .	653	48	27	21	—	1.22	82
Greenfield, . . .	3,589	521	267	254	—	2.42	41
Hawley, . . .	672	107	57	50	—	2.66	38
Heath, . . .	613	58	28	30	—	1.58	63
Leverett, . . .	877	72	40	32	—	1.37	73

1870.]

GENERAL ABSTRACT.

cxi

for Six Years—Continued.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
304	·91	111	490	224	262	4	1·46	69
66	·68	147	160	91	68	1	1·65	61
81	·65	155	134	74	60	—	1·07	93
1,075	1·16	86	1,728	966	762	—	1·87	53
88	·83	121	174	81	91	2	1·63	61
84	·72	139	69	35	33	1	1·46	69
882	1·12	89	973	453	514	6	1·24	81
191	·85	117	382	178	204	—	1·71	58
2,265	1·30	76	2,759	1,310	1,448	1	1·59	63
1,690	1·00	100	2,641	1,272	1,363	6	1·56	64
40	·82	123	81	44	37	—	1·65	61
83	·83	120	165	83	82	—	1·65	61
456	·99	101	1,050	535	515	—	2·27	44
153	·86	116	292	143	148	1	1·64	61
52	·85	117	75	36	39	—	1·24	81
13	·46	219	34	21	13	—	1·19	84
56	·65	153	138	68	70	—	1·61	62
859	1·14	88	1,326	625	699	2	1·67	57
125	·82	122	238	121	117	—	1·56	64
255	·58	173	648	311	337	—	1·47	68
277	1·19	85	427	224	203	—	1·82	55
52	·75	134	129	64	65	—	1·86	54
1,343	·93	108	2,695	1,307	1,378	10	1·86	54
239	1·05	95	422	188	234	—	1·86	54
80	·60	169	196	107	88	1	1·45	69
56	·51	198	145	69	76	—	1·31	76
44	·61	165	93	48	45	—	1·28	78
57	·96	104	84	37	47	—	1·42	70
64	·53	188	201	97	104	—	1·67	60
1,721	·88	114	3,102	1,446	1,647	9	1·58	63
52	·74	136	90	38	52	—	1·27	79
73	1·26	79	81	46	35	—	1·41	71
105	·90	111	203	106	97	—	1·74	58
42	·70	144	75	36	39	—	1·24	80
100	·96	105	138	64	74	—	1·32	76
75	·85	117	165	72	93	—	1·88	53
109	·50	200	288	119	169	—	1·32	76
36	1·03	97	55	32	23	—	1·58	63
26	·66	151	57	31	25	1	1·46	69
278	1·30	77	398	197	201	—	1·85	54
20	·50	202	65	27	38	—	1·61	62
37	1·01	99	38	17	20	1	1·06	94
32	·61	164	78	37	41	—	1·48	67

TABLE XII.—*General Abstract*

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
<i>Franklin—Con.</i>							
Leyden, . . .	518	67	35	32	—	2.16	46
Monroe, . . .	201	17	11	6	—	1.41	71
Montague, . . .	2,224	175	78	96	1	1.42	71
New Salem, . . .	987	91	50	40	1	1.54	65
Northfield, . . .	1,720	168	83	84	1	1.63	61
Orange, . . .	2,091	127	63	64	—	1.01	99
Rowe, . . .	581	43	23	20	—	1.23	81
Shelburne, . . .	1,582	167	86	81	—	1.76	57
Shutesbury, . . .	614	68	32	36	—	1.85	54
Sunderland, . . .	832	103	46	57	—	2.06	48
Warwick, . . .	769	86	48	38	—	1.86	54
Wendell, . . .	539	36	16	20	—	1.11	89
Whately, . . .	1,068	132	67	64	1	2.06	49
HAMPDEN COUNTY, .	78,409	11,158	5,706	5,433	19	2.37	42
Agawam, . . .	2,001	255	126	128	1	2.13	47
Blandford, . . .	1,026	120	50	70	—	1.95	51
Brimfield, . . .	1,288	159	77	80	2	2.10	48
Chester, . . .	1,253	128	67	61	—	1.70	59
Chicopee, . . .	9,607	1,313	658	654	1	2.28	44
Granville, . . .	1,293	134	63	70	1	1.72	58
Holland, . . .	344	52	29	22	1	2.72	37
Holyoke, . . .	10,733	1,580	829	751	—	2.45	41
Longmeadow, . . .	1,342	186	98	88	—	2.31	43
Ludlow, . . .	1,136	154	80	73	1	2.26	44
Monson, . . .	3,204	331	180	150	1	1.72	58
(State Almshouse,) . . .	—	145	74	71	—	—	—
Montgomery, . . .	318	45	24	21	—	2.35	43
Palmer, . . .	3,631	584	276	308	—	2.68	37
Russell, . . .	635	88	42	45	1	2.31	43
Southwick, . . .	1,100	128	63	65	—	1.94	52
Springfield, . . .	26,703	4,038	2,060	1,977	1	2.52	40
Tolland, . . .	509	63	42	21	—	2.07	48
Wales, . . .	831	92	56	36	—	1.85	54
Westfield, . . .	6,519	905	469	427	9	2.31	43
West Springfield, . . .	2,606	377	182	195	—	2.40	41
Wilbraham, . . .	2,330	281	161	120	—	2.01	50
HAMPSHIRE COUNTY,	44,388	5,808	3,028	2,772	8	2.18	46
Amherst, . . .	4,035	527	289	238	—	2.18	46
Belchertown, . . .	2,428	251	130	121	—	1.72	58
Chesterfield, . . .	811	93	47	46	—	1.92	52

for Six Years—Continued.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
31	1.00	100	48	26	22	—	1.55	65
21	1.75	58	10	3	7	—	.88	121
89	.72	139	189	98	91	—	1.53	65
60	1.01	99	101	45	56	—	1.71	59
65	.63	159	153	60	92	1	1.48	67
142	1.14	88	231	105	124	2	1.84	54
21	.60	166	51	17	34	—	1.46	68
89	.93	107	159	72	84	3	1.68	60
35	.95	105	71	33	38	—	1.93	52
36	.72	139	99	38	61	—	1.98	50
51	1.11	91	95	44	50	1	2.06	49
47	1.45	69	60	33	27	—	1.86	54
49	.76	181	104	50	54	—	1.62	62
4,811	1.02	98	7,959	4,002	3,943	14	1.69	59
68	.57	177	138	69	63	1	1.11	90
52	.85	118	114	55	59	—	1.80	54
57	.75	134	117	61	56	—	1.53	65
57	.76	132	72	37	35	—	.96	104
668	1.16	86	1,081	546	535	—	1.88	53
52	.67	149	100	36	64	—	1.29	78
14	.68	147	41	17	24	—	1.99	50
825	1.28	78	1,158	587	570	1	1.80	56
67	.83	120	147	73	74	—	1.82	55
62	.91	110	97	48	46	3	1.42	70
127	.66	151	247	134	113	—	1.28	78
—	—	—	366	219	147	—	—	—
18	.94	106	48	26	22	—	2.52	40
326	1.50	67	348	171	176	1	1.60	63
35	.92	109	58	30	27	1	1.52	66
48	.75	133	100	53	45	2	1.52	66
1,719	1.07	93	2,551	1,255	1,296	—	1.59	63
21	.69	145	33	20	11	2	1.08	93
49	.98	102	65	33	32	—	1.30	77
361	.93	108	658	312	343	3	1.68	59
84	.54	186	246	122	124	—	1.57	64
101	.72	138	179	98	81	—	1.28	78
2,576	.97	103	4,103	1,979	2,008	16	1.54	65
182	.75	133	355	170	185	—	1.47	68
135	.92	108	186	89	93	4	1.28	78
45	.92	108	80	45	35	—	1.64	61

TABLE XII.—General Abstract

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
<i>Hampshire—Con.</i>							
Cummington, . . .	1,037	116	57	59	—	1.86	54
Easthampton, . . .	8,620	486	266	219	1	2.24	45
Enfield, . . .	1,023	134	66	68	—	2.18	46
Goshen, . . .	868	43	24	18	1	1.95	51
Granby, . . .	863	99	53	46	—	1.91	52
Greenwich, . . .	665	49	26	23	—	1.23	81
Hadley, . . .	2,301	348	177	171	—	2.52	40
Hatfield, . . .	1,594	335	165	170	—	3.50	29
Huntington, . . .	1,156	106	52	54	—	1.53	65
Middlefield, . . .	728	103	51	52	—	2.36	42
Northampton, . . .	10,160	1,482	802	675	5	2.43	41
Pelham, . . .	673	42	21	21	—	1.04	96
Plainfield, . . .	521	62	31	30	1	1.98	50
Prescott, . . .	541	47	26	21	—	1.45	69
South Hadley, . . .	2,840	363	201	162	—	2.13	47
Southampton, . . .	1,159	135	68	67	—	1.94	52
Ware, . . .	4,259	496	245	251	—	1.94	52
Westhampton, . . .	587	94	40	54	—	2.67	38
Williamsburg, . . .	2,159	294	135	159	—	2.27	44
Worthington, . . .	860	103	56	47	—	2.00	50
MIDDLESEX COUNTY,	274,353	38,426	19,658	18,713	55	2.33	43
Acton, . . .	1,593	190	90	100	—	2.00	50
Arlington, . . .	8,261	483	247	236	—	2.47	41
Ashby, . . .	994	95	47	48	—	1.59	63
Ashland, . . .	2,186	295	159	133	3	2.25	45
Bedford, . . .	849	109	76	33	—	2.14	47
Belmont, . . .	1,513	214	97	117	—	2.36	42
Billerica, . . .	1,833	201	92	109	—	1.83	55
Boxborough, . . .	338	31	13	18	—	1.53	65
Brighton, . . .	4,967	844	449	395	—	2.83	35
Burlington, . . .	626	61	36	25	—	1.62	62
Cambridge, . . .	39,634	6,554	3,317	3,230	7	2.75	36
Carlisle, . . .	569	57	31	26	—	1.67	60
Charlestown, . . .	28,323	3,900	1,983	1,911	6	2.29	44
Chelmsford, . . .	2,374	328	175	153	—	2.30	43
Coneord, . . .	2,412	282	153	129	—	1.95	51
Dracut, . . .	2,078	270	129	141	—	2.16	46
Dunstable, . . .	471	42	19	23	—	1.49	67
Everett,* . . .	2,220	25	12	13	—	1.12	89
Framingham, . . .	4,968	546	280	266	—	1.83	55
Groton, . . .	3,584	506	245	260	1	2.35	43
Holliston, . . .	3,073	457	235	221	1	2.48	40
Hopkinton, . . .	4,419	732	366	365	1	2.76	36
Hudson,† . . .	3,389	383	194	188	1	2.29	44

* One year only. Incorporated 1870.

† Five years only. Incorporated 1866.

1870.]

GENERAL ABSTRACT.

CXXV

for Six Years—Continued.

MARRIAGES.			DEATHS.					
Couple.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
54	.87	115	97	45	52	—	1.56	64
153	.70	142	334	148	182	4	1.54	65
74	1.20	83	112	49	63	—	1.82	55
21	.91	110	43	23	20	—	1.95	51
30	.58	172	74	36	38	—	1.43	70
25	.62	160	73	42	31	—	1.83	55
93	.68	148	235	107	128	—	1.70	59
44	.46	217	177	86	91	—	1.85	54
72	1.04	96	120	58	61	1	1.73	58
23	.53	190	63	33	29	1	1.44	69
855	1.41	71	982	497	484	1	1.61	62
49	1.22	82	44	23	21	—	1.09	92
32	1.02	98	52	22	30	—	1.66	60
29	.89	112	40	18	22	—	1.23	81
147	.86	116	219	111	104	4	1.29	78
53	.76	131	117	49	68	—	1.68	59
292	1.15	88	380	180	199	1	1.49	67
18	.51	196	54	24	30	—	1.53	65
96	.74	135	173	85	88	—	1.34	75
54	1.05	96	93	39	54	—	1.81	55
14,526	.88	113	27,671	13,510	14,138	23	1.68	60
76	.79	126	155	70	85	—	1.62	62
103	.53	190	344	175	169	—	1.76	57
41	.69	145	125	57	67	1	2.09	48
106	.81	124	200	102	97	1	1.52	66
38	.75	134	89	45	44	—	1.75	57
43	.47	211	114	43	71	—	1.25	80
71	.65	155	203	109	94	—	1.84	54
13	.64	156	30	13	17	—	1.48	68
167	.56	178	491	260	231	—	1.65	61
21	.56	179	57	26	31	—	1.52	66
2,169	.91	110	3,767	1,853	1,908	6	1.58	63
31	.91	110	53	21	32	—	1.55	64
1,903	1.12	89	3,577	1,816	1,758	3	2.11	48
105	.74	136	211	92	119	—	1.48	68
120	.83	121	226	116	110	—	1.56	64
53	.43	235	196	77	118	1	1.57	64
16	.56	177	54	20	34	—	1.91	52
7	.32	317	29	12	16	1	1.31	77
241	.81	124	426	206	220	—	1.43	70
213	.99	101	325	153	172	—	1.51	66
190	1.03	97	254	124	130	—	1.37	73
185	.70	143	348	168	179	1	1.32	76
137	.81	124	219	109	110	—	1.31	77

TABLE XII.—*General Abstract*

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	Sex.			Ratio.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
<i>Middlesex—Con.</i>							
Lexington, . . .	2,277	259	129	130	—	1.89	53
Lincoln, . . .	791	88	44	44	—	1.86	54
Littleton, . . .	988	102	57	44	1	1.73	58
Lowell, . . .	40,928	4,937	2,561	2,374	2	2.01	50
Malden, . . .	7,367	1,215	615	600	—	2.75	36
Marlborough, . . .	8,474	1,856	939	917	—	3.65	27
Medford, . . .	5,717	587	302	280	5	1.71	58
Melrose, . . .	3,414	396	199	196	1	1.93	52
Natick, . . .	6,404	1,208	611	588	9	3.14	32
Newton, . . .	12,825	1,498	746	752	—	1.95	51
North Reading, . . .	942	113	58	55	—	2.00	50
Pepperell, . . .	1,842	225	126	99	—	2.04	49
Reading, . . .	2,664	241	121	120	—	1.51	66
Sherborn, . . .	1,062	89	43	46	—	1.40	72
Shirley, . . .	1,451	136	73	63	—	1.56	64
Somerville, . . .	14,685	2,217	1,126	1,090	1	2.52	40
Stoneham, . . .	4,513	529	280	249	—	1.95	51
Stow, . . .	1,813	245	138	107	—	2.27	44
Sudbury, . . .	2,091	246	123	123	—	1.96	51
Tewksbury, . . .	1,944	132	68	64	—	1.14	88
(State Almshouse), . . .	—	343	171	172	—	—	—
Townsend, . . .	1,962	259	137	122	—	2.20	46
Tyngsborough, . . .	629	41	22	19	—	1.09	92
Wakefield, . . .	4,135	538	281	255	2	2.17	46
Waltham, . . .	9,065	1,335	713	619	3	2.46	41
Watertown, . . .	4,326	616	304	308	4	2.38	42
Wayland, . . .	1,240	151	77	74	—	2.04	49
Westford, . . .	1,803	227	103	118	6	2.08	48
Weston, . . .	1,261	102	49	53	—	1.35	74
Wilmington, . . .	866	94	46	48	—	1.82	55
Winchester, . . .	2,645	393	213	180	—	2.50	40
Woburn, . . .	8,560	1,403	738	664	1	2.70	37
NANTUCKET COUNTY,	4,123	318	178	139	1	1.28	78
NORFOLK COUNTY, .	89,443	16,224	8,214	7,976	34	3.02	33
Bellingham, . . .	1,282	142	73	68	1	1.78	56
Braintree, . . .	3,948	483	243	239	1	2.04	49
Brookline, . . .	6,650	1,051	553	491	7	2.63	38
Canton, . . .	3,879	512	261	249	2	2.22	45
Cohasset, . . .	2,130	287	159	128	—	2.22	45
Dedham, . . .	7,342	1,118	579	538	1	2.54	39
Dorchester,* . . .	—	1,458	720	735	3	2.72	37
Dover, . . .	645	53	30	23	—	1.37	73

* Five years only. Annexed 1870.

for Six Years—Continued.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
111	.81	123	232	108	124	—	1.70	59
22	.46	216	59	30	29	—	1.25	80
44	.75	134	114	52	62	—	1.93	52
8,213	1.31	76	4,532	2,103	2,428	1	1.85	54
857	.81	124	660	320	338	2	1.49	67
462	.91	110	748	365	383	—	1.47	68
259	.76	132	468	203	265	—	1.37	73
158	.77	130	281	124	156	1	1.37	73
337	.88	114	573	296	277	—	1.49	67
509	.66	151	767	346	421	—	1.00	100
47	.83	120	96	48	48	—	1.70	59
103	.93	107	193	90	103	—	1.75	57
97	.61	165	266	125	141	—	1.66	60
53	.83	120	87	37	50	—	1.37	73
67	.77	120	141	61	80	—	1.62	62
301	.34	293	1,429	738	691	—	1.62	62
173	.64	157	369	187	182	—	1.37	73
78	.72	139	141	74	66	1	1.28	77
63	2.01	199	157	71	86	—	1.25	80
51	.44	229	97	42	55	—	.83	120
—	—	—	1,415	788	627	—	—	—
116	.98	102	214	105	109	—	1.82	55
29	.77	130	79	36	43	—	2.08	48
286	.95	105	385	186	199	—	1.56	64
609	1.12	89	888	435	451	2	1.64	61
288	1.11	90	358	166	191	1	1.38	73
42	.56	177	106	62	44	—	1.42	70
83	.77	130	190	92	97	1	1.76	57
42	.55	180	100	48	52	—	1.32	76
37	.71	140	96	50	46	—	1.85	54
120	.76	132	186	90	96	—	1.18	85
370	.72	139	751	365	386	—	1.47	68
255	1.03	97	580	276	304	—	2.34	43
4,974	.93	108	10,359	5,047	5,294	18	1.93	52
36	.45	221	91	50	39	2	1.14	88
152	.64	156	377	183	194	—	1.59	63
824	.81	123	546	272	274	—	1.37	78
173	.74	135	325	147	177	1	1.40	72
103	.81	124	198	100	98	—	1.55	65
339	.77	130	706	361	344	1	1.60	62
489	.91	110	893	416	474	3	1.66	60
26	.67	149	50	18	32	—	1.30	77

TABLE XII.—*General Abstract*

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
<i>Norfolk—Con.</i>							
Foxborough, . . .	8,057	296	138	155	3	1.61	62
Franklin, . . .	2,512	243	114	129	—	1.61	62
Hyde Park,* . . .	4,136	367	177	190	—	2.96	34
Medfield, . . .	1,142	109	54	55	—	1.59	63
Medway, . . .	3,721	478	139	238	1	2.14	47
Milton, . . .	2,683	384	203	181	—	2.39	42
Needham, . . .	8,607	523	240	282	1	2.41	41
Norfolk,† . . .	1,081	31	10	21	—	2.86	35
Quincy, . . .	7,442	1,057	550	504	3	3.45	29
Randolph, . . .	5,642	934	480	453	1	2.78	36
Roxbury,‡ . . .	—	2,634	1,351	1,283	—	3.09	32
Sharon, . . .	1,508	164	84	78	2	1.82	55
Stoughton, . . .	4,914	752	373	379	—	2.39	42
Walpole, . . .	2,137	230	125	103	2	1.79	56
West Roxbury, . . .	8,683	1,143	568	575	—	2.19	46
Weymouth, . . .	9,010	1,497	764	729	4	2.78	36
Wrentham, . . .	2,292	278	126	150	2	2.02	50
PLYMOUTH COUNTY,							
	65,365	8,897	4,606	4,276	15	2.27	44
Abington, . . .	9,308	1,456	753	703	—	2.63	38
Bridgewater, . . .	3,660	487	268	219	—	2.22	45
(State Almshouse), . . .	—	233	120	113	—	—	—
Carver, . . .	1,092	131	74	57	—	2.00	50
Duxbury, . . .	2,341	253	141	110	2	1.78	56
East Bridgewater, . . .	3,017	335	161	174	—	1.85	54
Halifax, . . .	619	70	30	40	—	1.89	53
Hanover, . . .	1,628	219	105	114	—	2.22	45
Hanson, . . .	1,219	152	82	70	—	2.08	48
Hingham, . . .	4,422	522	292	228	2	1.96	51
Hull, . . .	261	29	16	13	—	1.85	54
Kingston, . . .	1,604	179	86	92	1	1.85	54
Lakeville, . . .	1,159	158	71	87	—	2.27	44
Marion, . . .	896	103	43	60	—	1.92	52
Marshfield, . . .	1,659	186	98	86	2	1.85	54
Mattapoisett, . . .	1,361	139	66	72	1	1.92	52
Middleborough, . . .	4,687	482	247	235	—	1.70	58
North Bridgewater, . . .	8,007	1,221	613	604	4	2.33	43
Pembroke, . . .	1,447	181	93	88	—	2.08	48
Plymouth, . . .	6,238	927	478	446	3	2.50	40
Plympton, . . .	804	86	47	39	—	1.78	56
Rochester, . . .	1,024	115	60	55	—	1.89	53
Scituate, . . .	2,350	308	171	137	—	2.17	46
South Scituate, . . .	1,661	183	102	81	—	1.85	54
Wareham, . . .	3,098	517	268	249	—	2.78	36
West Bridgewater, . . .	1,803	225	121	104	—	2.08	48

* Three years only. Incorporated 1868.

† One year only. Incorporated 1870.

‡ Three years only. Annexed 1867.

1870.]

GENERAL ABSTRACT.

cxxix

for Six Years—Continued.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
136	.74	135	240	105	135	—	1.32	76
111	.74	136	229	98	129	2	1.52	66
94	.76	132	158	76	82	—	1.28	78
56	.82	122	94	42	52	—	1.37	73
169	.76	132	311	147	164	—	1.39	72
141	.88	114	247	118	129	—	1.54	65
133	.61	163	317	162	155	—	1.47	68
11	1.02	98	8	7	1	—	.74	135
336	1.10	91	730	386	344	—	2.38	42
262	.78	129	580	293	283	4	1.71	58
736	.86	116	1,746	818	925	3	2.05	49
63	.69	144	146	77	69	—	1.61	62
227	.72	139	443	225	217	1	1.41	71
87	.68	147	213	111	102	—	1.67	60
219	.42	238	641	317	323	1	1.23	81
421	.78	128	812	403	409	—	1.50	67
130	.94	106	258	115	143	—	1.88	53
8,434	.88	114	6,664	3,350	3,295	19	1.70	59
451	.81	124	737	371	363	3	1.32	76
176	.80	125	273	146	127	—	1.25	80
—	—	—	561	307	254	—	—	—
63	.96	104	112	63	49	—	1.69	59
112	.80	125	216	111	105	—	1.54	65
171	.94	106	286	149	137	—	1.58	63
35	.94	106	65	29	35	1	1.75	57
93	.95	105	164	92	72	—	1.67	60
70	.96	104	115	63	52	—	1.56	64
191	.72	139	450	206	243	1	1.69	59
10	.64	157	23	13	10	—	1.47	68
83	.86	116	168	73	95	—	1.75	57
61	.88	114	109	54	55	—	1.56	64
51	.95	105	102	54	48	—	1.92	52
72	.72	138	153	73	79	1	1.54	65
86	1.19	84	177	89	87	1	2.44	41
239	.85	118	423	201	222	—	1.52	66
446	.84	119	697	356	331	9	1.32	76
87	1.00	100	154	75	78	1	1.79	56
390	1.04	96	700	333	367	—	1.89	53
50	1.04	96	83	37	45	1	1.72	58
60	.98	102	94	54	40	—	1.54	65
118	.84	119	203	116	87	—	1.45	69
85	.85	117	160	65	95	—	1.61	62
173	.93	107	302	150	152	—	1.61	62
66	.61	164	137	70	67	—	1.26	79

TABLE XII.—*General Abstract*

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
SUFFOLK COUNTY, .	270,802	42,151	21,456	20,689	6	2.60	39
Boston, . . .	250,526	89,263	20,003	19,259	1	2.61	38
Chelsea, . . .	18,547	2,672	1,340	1,328	4	2.40	42
Revere, . . .	1,197	117	65	51	1	1.64	61
Winthrop, . . .	532	99	48	51	—	3.12	32
WORCESTER COUNTY, .	192,716	27,802	14,212	13,547	43	2.40	41
Ashburnham, . . .	2,172	296	162	133	1	2.27	44
Athol, . . .	3,517	288	148	140	—	1.37	73
Auburn, . . .	1,178	117	58	59	—	1.67	60
Barre, . . .	2,572	271	136	135	—	1.75	57
Berlin, . . .	1,016	142	66	76	—	2.32	43
Blackstone, . . .	5,421	896	454	439	3	4.00	25
Bolton, . . .	1,014	163	72	91	—	2.70	37
Boylston, . . .	800	106	55	51	—	2.22	45
Brookfield, . . .	2,527	349	167	182	—	2.32	43
Charlton, . . .	1,878	144	86	58	—	1.28	78
Clinton, . . .	5,429	898	455	440	3	2.78	36
Dana, . . .	758	67	25	42	—	1.47	68
Douglas, . . .	2,182	447	226	221	—	3.45	29
Dudley, . . .	2,388	432	216	216	—	3.03	33
Fitchburg, . . .	11,260	1,446	732	714	—	2.13	47
Gardner, . . .	3,333	419	220	199	—	2.08	48
Grafton, . . .	4,594	596	324	272	—	2.17	46
Hardwick, . . .	2,219	303	153	150	—	2.27	44
Harvard, . . .	1,341	118	51	67	—	1.35	74
Holden, . . .	2,062	216	110	106	—	1.75	57
Hubbardston, . . .	1,654	171	90	81	—	1.72	58
Lancaster, . . .	1,845	130	71	59	—	1.18	85
Leicester, . . .	2,768	416	219	197	—	2.50	40
Leominster, . . .	3,894	450	232	214	4	1.92	52
Lunenburg, . . .	1,121	116	67	49	—	1.72	58
Mendon, . . .	1,175	181	90	91	—	2.57	39
Milford, . . .	9,890	1,935	991	944	—	3.38	30
Millbury, . . .	4,397	886	425	411	—	3.16	32
New Braintree, . . .	640	51	22	26	3	1.33	75
Northborough, . . .	1,504	195	88	107	—	2.17	46
Northbridge, . . .	3,774	539	271	268	—	2.38	42
North Brookfield, . . .	3,343	523	285	238	—	2.61	38
Oakham, . . .	860	66	38	28	—	1.28	78
Oxford, . . .	2,669	356	191	165	—	2.22	45
Paxton, . . .	646	46	21	25	—	1.19	84
Petersham, . . .	1,335	123	62	61	—	1.54	65
Phillipston, . . .	693	76	40	35	1	1.83	55

for Six Years—Continued.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
19,165	1.18	85	32,365	16,526	15,882	7	2.00	50
18,046	1.20	83	30,450	15,564	14,886	—	2.02	49
1,078	.97	103	1,819	928	890	6	.90	111
20	.28	359	64	28	36	—	.89	112
21	.64	157	32	11	20	1	1.00	100
10,598	.92	109	19,102	9,569	9,498	35	1.65	61
147	1.12	89	241	132	109	—	1.85	54
206	.98	102	309	154	155	—	1.47	68
41	.58	172	64	31	33	—	.91	110
142	.92	109	266	127	138	1	1.70	58
65	1.09	92	99	48	50	1	1.64	61
346	1.54	65	520	256	262	2	2.32	48
55	.90	111	155	72	83	—	2.56	39
44	.92	109	100	51	49	—	2.08	48
137	.90	111	203	92	111	—	1.33	75
91	.81	124	185	94	91	—	1.64	61
317	.97	103	492	241	249	2	1.52	66
50	1.10	91	69	36	33	—	1.52	66
127	.97	103	255	128	127	—	1.96	51
59	.41	242	287	129	158	2	2.00	50
660	.98	102	1,055	549	506	—	1.56	64
142	.71	141	243	123	120	—	1.22	82
232	.84	119	356	166	189	1	1.30	77
106	.79	126	114	51	63	—	.85	117
42	.52	192	139	64	75	—	1.54	65
109	.88	113	191	92	99	—	1.54	65
86	.87	115	136	60	74	2	1.37	73
91	.82	122	137	68	69	—	1.23	81
122	.73	136	279	152	127	—	1.67	60
134	.57	174	409	197	212	—	1.75	57
52	.78	129	135	62	73	—	2.00	50
46	.65	153	103	47	56	—	1.46	68
586	1.02	98	1,167	606	561	—	2.04	49
245	.92	108	453	237	215	1	1.72	58
36	.93	107	55	27	27	1	1.43	70
69	.76	131	142	68	74	—	1.57	64
183	.81	124	255	117	138	—	1.13	89
148	.74	135	343	169	172	2	1.71	58
33	.64	156	102	50	51	1	1.98	51
131	.82	122	265	124	140	1	1.66	60
23	.60	168	69	37	32	—	1.78	56
66	.83	121	135	66	69	—	1.69	59
46	1.11	90	74	31	43	—	1.78	56

TABLE XII.—*General Abstract*

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
<i>Worcester—Con.</i>							
Princeton, . . .	1,279	121	61	60	—	1.58	63
Royalston, . . .	1,354	131	72	54	5	1.61	62
Rutland, . . .	1,024	131	72	59	—	2.13	47
Shrewsbury, . . .	1,610	231	130	101	—	2.39	42
Southborough, . . .	2,135	291	153	138	—	2.27	44
Southbridge, . . .	5,208	747	361	386	—	2.39	42
Spencer, . . .	3,952	797	390	405	2	3.36	30
Sterling, . . .	1,670	195	105	88	2	1.95	51
Sturbridge, . . .	2,101	183	95	88	—	1.45	69
Sutton, . . .	2,699	353	186	167	—	2.18	46
Templeton, . . .	2,802	379	203	176	—	2.26	44
Upton, . . .	1,989	279	133	146	—	2.34	43
Uxbridge, . . .	3,058	416	209	205	2	2.27	44
Warren, . . .	2,625	401	218	183	—	2.54	39
Webster, . . .	4,763	708	362	346	—	2.47	40
Westborough, . . .	3,601	545	285	260	—	2.52	40
West Boylston, . . .	2,862	435	211	224	—	2.53	39
West Brookfield, . . .	1,842	255	140	115	—	2.31	43
Westminster, . . .	1,770	161	77	84	—	1.52	66
Winchendon, . . .	3,398	435	225	198	12	2.13	47
Worcester, . . .	41,105	6,684	3,405	3,274	5	2.71	37

1870.]

GENERAL ABSTRACT.

cxxxiii

for Six Years—Concluded.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
57	.74	135	129	64	65	5	1.68	59
77	.95	105	158	72	86	—	1.94	51
51	.83	121	101	40	61	—	1.64	61
79	.82	122	186	96	90	—	1.93	52
95	.74	135	185	91	94	—	1.45	69
339	1.09	92	616	297	317	2	1.97	51
159	.67	149	356	186	167	3	1.50	67
67	.67	150	173	82	91	—	1.73	58
94	.75	134	167	84	83	—	1.32	75
121	.75	134	237	129	108	—	1.46	68
156	.93	108	269	139	130	—	1.60	62
99	.83	121	166	75	91	—	1.89	72
183	1.00	100	268	132	136	—	1.46	68
145	.92	109	226	114	112	—	1.43	70
411	1.43	70	432	207	223	2	1.51	66
164	.76	132	349	196	153	—	1.61	62
139	.81	123	235	116	119	—	1.37	73
81	.74	136	184	96	86	2	1.67	60
87	.82	122	183	89	94	—	1.72	58
212	1.04	96	342	172	164	6	1.68	60
2,567	1.04	96	4,538	2,338	2,197	8	1.84	54

TABLE XII.—*General Abstract*

Counties and Towns.	Population. U. S. Census 1870.	BIRTHS.					
		Persons.	SEX.			RATIO.	
			Males.	Females.	Unk.	Births to 100 Persons living.	Persons living to one Birth.
<i>Worcester—Con.</i>							
Princeton, . . .	1,279	121	61	60	—	1.58	63
Royalston, . . .	1,854	131	72	54	5	1.61	62
Rutland, . . .	1,024	131	72	59	—	2.13	47
Shrewsbury, . . .	1,610	231	130	101	—	2.39	42
Southborough, . . .	2,185	291	153	138	—	2.27	44
Southbridge, . . .	5,208	747	361	386	—	2.39	42
Spencer, . . .	3,952	797	390	405	2	3.36	30
Sterling, . . .	1,670	195	105	88	2	1.95	51
Sturbridge, . . .	2,101	183	95	88	—	1.45	69
Sutton, . . .	2,699	353	186	167	—	2.18	46
Templeton, . . .	2,802	379	203	176	—	2.26	44
Upton, . . .	1,989	279	133	146	—	2.34	43
Uxbridge, . . .	3,058	416	209	205	2	2.27	44
Warren, . . .	2,625	401	218	183	—	2.54	39
Webster, . . .	4,763	708	362	346	—	2.47	40
Westborough, . . .	3,601	545	285	260	—	2.52	40
West Boylston, . . .	2,862	435	211	224	—	2.53	39
West Brookfield, . . .	1,842	255	140	115	—	2.31	43
Westminster, . . .	1,770	161	77	84	—	1.52	66
Winchendon, . . .	3,398	435	225	198	12	2.13	47
Worcester, . . .	41,105	6,684	3,405	3,274	5	2.71	37

1870.]

GENERAL ABSTRACT.

cxxxiii

for Six Years—Concluded.

MARRIAGES.			DEATHS.					
Couples.	RATIO.		Persons.	SEX.			RATIO.	
	Marriages to 100 Persons.	Persons living to one Marriage.		Males.	Females.	Unk.	Deaths to 100 Persons living.	Persons living to one Death.
57	.74	135	129	64	65	5	1.68	59
77	.95	105	158	72	86	—	1.94	51
51	.83	121	101	40	61	—	1.64	61
79	.82	122	186	96	90	—	1.93	52
95	.74	135	185	91	94	—	1.45	69
339	1.09	92	616	297	317	2	1.97	51
159	.67	149	356	186	167	3	1.50	67
67	.67	150	173	82	91	—	1.73	58
94	.75	134	167	84	83	—	1.32	75
121	.75	134	237	129	108	—	1.46	68
156	.93	108	269	139	130	—	1.60	62
99	.83	121	166	75	91	—	1.39	72
183	1.00	100	268	132	136	—	1.46	68
145	.92	109	226	114	112	—	1.43	70
411	1.43	70	432	207	223	2	1.51	66
164	.76	132	349	196	153	—	1.61	62
139	.81	123	235	116	119	—	1.37	73
81	.74	136	184	96	86	2	1.67	60
87	.82	122	183	89	94	—	1.72	58
212	1.04	96	342	172	164	6	1.68	60
2,567	1.04	96	4,538	2,338	2,197	3	1.84	54

TABLE XII.—BIRTHS.—SIX YEARS—1865–70.

Distinguishing by Counties, by Months, and by Sex, the registered Number of Children BORN ALIVE during the Six Years, 1865–70; also, for the entire State, the Percentage of the Numbers in each Month (distinguishing Sex), to the Total Number.

6 Years. Months.	SEX.	Percentage.	STATE.	Bathurst.	Berkshire.	Bristol.	Dukes and Norfolk.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	North.	Plymouth.	Suffolk.	Worcester.
6 Years.	Totals,	100.00	209,989	4,413	9,226	14,338	700	27,149	3,697	11,158	5,808	38,426	16,224	8,897	42,151	27,802
	Males,	51.36	107,856	2,267	4,841	7,445	365	14,161	1,897	5,706	3,028	19,658	8,214	4,606	21,456	14,212
	Females,	48.48	101,805	2,119	4,366	6,852	331	12,987	1,794	5,483	2,772	18,713	7,976	4,276	20,689	13,547
	Unknown,	.16	328	27	19	41	4	51	6	19	8	55	34	15	6	43
Jan.	Totals,	7.41	15,570	305	628	1,102	50	1,948	248	833	418	2,793	1,147	662	8,310	2,126
	Males,	3.80	7,975	145	342	588	27	1,062	131	406	210	1,408	589	327	1,624	1,116
	Females,	3.60	7,573	160	286	509	21	884	116	425	207	1,383	556	333	1,686	1,007
	Unknown,	.01	22	-	-	5	2	2	1	2	1	2	.2	2	-	3
Feb.	Totals,	6.96	14,616	254	642	1,071	45	1,825	211	724	381	2,664	1,120	636	3,132	1,911
	Males,	3.62	7,607	126	332	566	15	957	105	368	216	1,408	560	310	1,621	1,023
	Females,	3.33	6,981	127	307	502	29	864	106	355	168	1,251	557	326	1,511	883
	Unknown,	.01	28	1	3	3	1	4	-	1	2	5	3	-	-	5
Mar.	Totals,	8.09	16,993	283	745	1,151	38	2,165	301	912	470	3,141	1,316	733	3,552	2,186
	Males,	4.20	8,816	142	399	612	23	1,147	160	461	229	1,583	662	385	1,867	1,146
	Females,	3.89	8,166	141	345	538	15	1,018	141	450	240	1,556	652	348	1,684	1,088
	Unknown,	.01	11	-	1	1	-	-	-	1	1	2	2	-	1	2
Apr.	Totals,	7.57	15,895	292	736	1,083	55	1,996	276	860	474	2,815	1,232	694	3,186	2,196
	Males,	3.89	8,187	150	379	552	29	1,036	152	428	252	1,439	628	352	1,649	1,141
	Females,	3.67	7,693	142	356	529	26	958	123	431	222	1,374	604	341	1,536	1,051
	Unknown,	.01	15	-	1	2	-	2	1	1	-	2	-	1	1	4
May.	Totals,	7.84	16,473	272	779	1,105	58	2,038	320	842	475	2,963	1,215	686	3,384	2,336
	Males,	4.00	8,410	139	394	591	29	1,085	162	414	246	1,510	613	368	1,697	1,162
	Females,	3.83	8,053	131	384	514	29	951	158	425	229	1,453	601	318	1,687	1,173
	Unknown,	.01	10	2	1	-	-	2	-	3	-	-	1	-	-	1

1870.]

BIRTHS.

CXXXV

June.	Totals,	7.87	16,519	815	769	1,098	74	2,063	814	810	450	3,010	1,294	693	8,851	2,278
	Males,	4.04	8,480	165	411	591	49	1,048	159	446	234	1,534	646	343	1,677	1,177
	Females,	3.82	8,020	149	356	504	25	1,012	155	363	216	1,472	647	349	1,674	1,098
	Unknown,	.01	19	1	2	3	-	3	-	1	-	4	1	1	-	3
July.	Totals,	8.73	18,338	431	837	1,239	67	2,358	352	991	512	3,284	1,361	782	3,606	2,518
	Males,	4.48	9,405	232	437	635	40	1,196	187	474	263	1,700	699	403	1,838	1,301
	Females,	4.24	8,903	198	398	597	27	1,153	165	516	249	1,580	658	377	1,768	1,217
	Unknown,	.01	30	1	2	7	-	9	-	1	-	4	4	2	-	-
Aug.	Totals,	9.17	19,264	473	836	1,271	67	2,659	354	1,094	511	3,490	1,425	784	3,739	2,561
	Males,	4.66	9,790	253	428	662	34	1,395	175	556	255	1,762	745	416	1,862	1,247
	Females,	4.50	9,456	217	407	607	33	1,264	178	536	255	1,725	680	367	1,876	1,311
	Unknown,	.01	18	3	1	2	-	-	1	2	1	3	-	1	1	3
Sept.	Totals,	8.91	18,713	490	853	1,286	59	2,524	355	998	528	3,487	1,451	822	3,502	2,363
	Males,	4.57	9,592	258	453	638	24	1,276	186	509	254	1,810	735	443	1,797	1,209
	Females,	4.33	9,096	229	399	647	35	1,244	169	481	273	1,673	714	378	1,704	1,150
	Unknown,	.01	25	3	1	1	-	4	-	3	1	4	2	1	1	4
Oct.	Totals,	9.25	19,431	465	843	1,322	56	2,603	346	1,044	545	3,597	1,510	792	3,773	2,535
	Males,	4.71	9,397	206	447	680	36	1,327	192	555	285	1,817	753	408	1,935	1,256
	Females,	4.52	9,506	256	495	640	20	1,272	153	488	259	1,777	754	381	1,837	1,275
	Unknown,	.01	28	4	1	2	-	4	1	1	1	3	3	3	1	4
Nov.	Totals,	8.91	18,703	431	767	1,264	70	2,509	304	1,016	510	3,406	1,545	785	3,736	2,360
	Males,	4.61	9,683	229	410	635	32	1,346	141	524	275	1,760	768	426	1,945	1,192
	Females,	4.28	8,987	195	355	625	37	1,153	162	491	235	1,643	775	358	1,791	1,167
	Unknown,	.02	33	7	2	4	1	10	1	1	-	3	2	1	-	1
Dec.	Totals,	9.19	19,286	395	777	1,310	61	2,450	314	1,008	525	3,750	1,600	824	3,873	2,399
	Males,	4.74	9,950	221	404	685	27	1,281	146	551	307	1,917	812	423	1,943	1,233
	Females,	4.42	9,276	171	372	619	34	1,159	167	456	218	1,816	776	398	1,929	1,161
	Unknown,	.03	60	3	1	6	-	10	1	1	-	17	12	3	1	5
Not stated.	Totals,	.08	188	7	14	36	-	11	2	31	9	26	8	4	7	33
	Males,	.03	64	1	5	10	-	5	1	14	2	10	4	2	1	9
	Females,	.04	95	4	6	21	-	5	1	16	6	10	2	2	6	16
	Unknown,	.01	29	2	3	5	-	1	-	1	1	6	2	-	-	8

SUPPLEMENT TO TABLE XIII.

PLURALITY BIRTHS.—SIX YEARS—1865-70.

[Included in Tables XII. and XIII.]

6 Ye.	{	Fem., .	1,988	54	123	1	18	87	110	52	872	182	108	354	252	
		Unk., .	2	-	-	-	2	-	-	-	-	-	-	-	-	
Jan.	{	Totals, .	300	12	15	-	2	6	8	6	58	20	14	78	29	
		Males, .	147	4	9	-	-	1	2	4	25	11	8	38	13	
		Fem., .	151	8	6	-	-	5	6	2	33	9	6	35	16	
		Unk., .	2	-	-	-	2	-	-	-	-	-	-	-	-	
Feb.	{	Totals, .	260	1	14	-	4	2	18	4	11	11	10	46	40	
		Males, .	129	-	6	-	1	-	11	4	4	21	14	5	30	24
		Fem., .	131	4	8	-	3	2	7	-	-	27	10	5	16	16
Mar.	{	Totals, .	268	2	11	-	-	5	16	8	58	30	12	41	39	
		Males, .	135	1	10	-	-	5	7	4	4	30	16	4	19	20
		Fem., .	133	1	4	-	-	-	9	4	4	28	14	8	25	19
Apr.	{	Totals, .	348	4	28	-	6	11	12	8	60	38	11	68	52	
		Males, .	178	2	11	-	4	3	6	3	3	28	22	10	32	20
		Fem., .	170	2	12	-	2	5	6	5	5	32	16	8	36	32
May.	{	Totals, .	335	8	11	-	-	6	20	11	65	14	20	50	52	
		Males, .	179	4	7	-	-	11	13	4	4	36	7	16	29	29
		Fem., .	156	4	11	-	-	3	7	8	8	29	7	1	22	23
June.	{	Totals, .	376	8	24	-	4	11	22	4	50	40	11	67	42	
		Males, .	192	3	11	-	1	6	12	3	3	27	26	7	33	17
		Fem., .	184	5	10	18	3	25	2	10	1	23	14	11	34	25
July.	{	Totals, .	348	12	26	24	2	62	10	14	12	68	16	18	40	44
		Males, .	177	7	15	11	1	26	8	8	5	37	9	8	19	27
		Fem., .	171	5	11	12	1	36	7	6	7	31	7	10	21	17

SUPPLEMENT TO TABLE XIII.—Concluded.

Months.	SEX.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
Aug.	Totals, .	887	10	34	12	4	64	10	22	10	62	20	12	80	47
	Males, .	200	8	18	6	1	30	5	15	6	35	15	8	40	18
	Fem., .	187	2	16	6	3	34	5	7	4	27	5	9	40	29
Sept.	Totals, .	854	18	26	26	2	42	6	30	6	61	16	33	56	32
	Males, .	197	11	15	15	2	28	3	15	2	33	8	21	25	19
	Fem., .	157	7	11	11	—	14	3	15	4	28	8	12	31	13
Oct.	Totals, .	412	10	22	36	4	58	3	26	10	86	35	28	58	36
	Males, .	206	4	12	23	4	36	3	12	5	37	21	11	24	14
	Fem., .	206	6	10	13	—	22	—	14	5	49	14	17	34	22
Nov.	Totals, .	824	14	22	14	2	52	6	16	6	46	82	20	53	41
	Males, .	165	4	11	8	1	27	2	8	2	24	14	9	35	20
	Fem., .	159	10	11	6	1	25	4	8	4	22	18	11	18	21
Dec.	Totals, .	383	—	18	28	2	65	2	25	16	74	32	8	81	32
	Males, .	200	—	8	13	2	42	1	10	8	31	22	1	49	13
	Fem., .	183	—	10	15	—	23	1	15	8	43	10	7	32	19

TABLE XIV.—STILLBORN.—SIX YEARS—1865-70.

Distinguishing by Counties, by Months, and by Sex, the registered Number of Still-births during the Six Years, 1865-70.

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TABLE XIV.—Concluded.

Months.	SEX.	WYOM.	Barstable.	Berkshire.	Bristol.	Dukes and Nantucket.									Norfolk.	Plymouth.	Suffolk.	Worcester.
Aug.	Totals, .	510	8	6	26	—	64	2	12	5	62	31	15	243	86			
	Males, .	277	4	3	16	—	27	—	7	3	35	14	5	143	20			
	Fem., .	199	4	2	7	—	33	2	4	2	20	12	8	94	14			
	Unk., .	34	—	1	3	—	4	—	1	—	7	5	5	6	2			
Sept.	Totals, .	472	11	2	26	1	53	5	17	6	82	27	8	199	35			
	Males, .	251	6	1	15	—	25	2	8	3	38	15	6	115	17			
	Fem., .	181	3	—	10	—	20	3	6	3	37	6	1	78	14			
	Unk., .	40	2	1	1	1	8	—	3	—	7	6	1	6	4			
Oct.	Totals, .	481	12	8	20	—	51	4	10	6	53	29	12	225	35			
	Males, .	268	5	3	20	—	32	—	5	3	30	16	5	180	19			
	Fem., .	171	4	5	13	—	14	3	4	2	15	7	6	88	13			
	Unk., .	42	3	3	3	—	5	1	1	1	8	6	1	7	3			
Nov.	Totals, .	505	11	15	33	—	54	6	10	6	82	26	11	205	40			
	Males, .	274	7	5	22	—	26	4	9	2	40	14	6	119	20			
	Fem., .	194	4	6	7	—	20	1	7	3	30	9	5	81	17			
	Unk., .	35	—	4	4	—	8	1	—	1	6	8	—	5	3			
Dec.	Totals, .	602	13	6	20	2	55	8	23	2	66	40	10	252	44			
	Males, .	335	5	3	21	—	25	6	14	1	35	15	7	155	26			
	Fem., .	231	2	1	22	1	34	1	8	1	37	20	6	96	12			
	Unk., .	36	6	2	3	1	9	1	1	—	5	5	—	1	4			
Not sta'd.	Totals, .	12	—	1	—	—	2	—	—	—	1	3	1	—	2			
	Males, .	5	—	—	1	—	2	—	—	—	—	—	1	—	1			
	Fem., .	4	—	—	—	—	—	—	—	—	—	3	—	—	—			
	Unk., .	3	—	1	—	—	—	—	—	—	1	—	—	—	1			

TABLE XV.—MARRIAGES.—SIX YEARS—1865–70.

Distinguishing by Counties, and by Months, the Number of Marriages registered during the Six Years, 1865–70.

SIX YEARS. MONTHS.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes & Mary- Island.	Essex.	Franklin.	Hamden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
SIX YEARS,	85,327	1,992	3,415	5,703	456	11,962	1,721	4,805	2,576	14,526	4,974	3,434	19,165	10,598
January, .	7,805	260	271	518	41	1,053	168	482	222	1,258	418	345	1,779	995
February, .	6,197	148	286	356	34	809	113	442	172	1,011	342	213	1,556	715
March, .	4,468	132	181	306	33	689	139	261	151	703	232	201	867	573
April, .	6,350	139	239	364	17	851	151	342	215	1,094	390	239	1,490	819
May, .	7,352	144	288	477	31	968	162	474	232	1,235	420	258	1,686	977
June, .	7,509	122	237	540	28	1,084	120	880	210	1,362	458	297	1,695	976
July, .	6,180	104	239	479	41	909	100	347	172	1,086	333	226	1,465	729
August, .	5,630	85	190	375	40	789	91	288	161	948	328	189	1,447	699
September, .	7,216	97	330	444	36	1,031	118	395	215	1,358	428	275	1,652	837
October, .	8,240	149	357	525	65	1,090	156	457	241	1,417	511	280	1,961	1,081
November, .	10,908	346	379	763	46	1,562	238	568	347	1,883	675	544	2,227	1,330
December, .	7,289	262	305	551	44	1,122	159	359	237	1,212	444	352	1,337	905
Unknown, .	183	4	113	5	—	5	6	10	1	9	—	15	3	12

TABLE XVI.—MARRIAGES.—SIX YEARS—1865-70.

Exhibiting the Social Condition and Ages of Parties Married during the Six Years, 1865-70.

AGGREGATE—Of all Conditions.

(A.) First Marriage of both Parties.

ALL AGES.	66,310	15879	84138	12648	2478	555	100	58	26	6	6	1	2	1	259
Und. 20.	1,520	1051	407	22	2	—	—	—	—	—	—	—	—	—	2
20 to 25,	30,402	10828	17577	2,291	146	20	—	—	—	—	—	—	—	—	48
25 to 30,	23,527	3669	12527	6,550	640	79	10	5	1	—	—	—	—	1	45
30 to 35,	7,270	643	2816	2,710	934	130	16	4	—	—	—	—	—	—	15
35 to 40,	2,272	118	635	773	488	221	32	6	1	—	—	—	—	—	8
40 to 45,	700	24	117	193	185	118	48	11	5	1	—	—	—	—	4
45 to 50,	281	7	89	70	61	54	81	13	2	—	1	—	—	—	8
50 to 55,	108	2	6	19	17	29	12	9	6	2	—	—	—	—	1
55 to 60,	46	2	6	7	1	11	11	2	4	2	—	—	—	—	1
60 to 65,	14	—	—	—	1	1	2	2	3	—	4	—	1	—	—
65 to 70,	8	—	1	—	1	—	1	—	3	—	1	1	—	—	—
70 to 75,	8	—	—	—	—	—	—	1	—	1	—	—	1	—	—
75 to 80,	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Over 80,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unk.,	157	10	8	1	—	—	—	—	1	—	—	—	—	—	142

TABLE XVI.—Continued.

(B.) First Marriage of Male and Second Marriage of Female.

AGE OF MALES.	AGE OF FEMALES.														
	ALL AGES.	Under 20	20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	60 to 65	65 to 70	70 to 75	Over 75	Unknown.
ALL AGES.	4,543	68	889	1508	1084	594	251	101	35	13		1	1	-	40
Und. 20,	81	2	10	7	2	1	-	-	-	-	-	-	-	-	-
20 to 25,	938	41	378	351	123	33	4	2	1	-	-	-	-	-	5
25 to 30,	1,478	19	282	673	845	118	21	6	8	-	-	-	-	-	11
30 to 35,	1,088	1	99	315	845	151	87	9	1	2	-	-	-	-	8
35 to 40,	584	-	40	111	174	159	55	17	2	-	-	-	-	-	8
40 to 45,	271	-	12	32	58	69	67	25	7	-	-	-	-	-	-
45 to 50,	148	-	6	10	18	41	41	22	7	8	-	-	-	-	-
50 to 55,	73	-	1	7	12	11	14	18	1	8	-	-	-	-	1
55 to 60,	31	-	1	2	2	10	7	4	1	3	-	-	-	-	-
60 to 65,	19	-	-	-	1	2	1	1	4	2	-	-	-	-	-
65 to 70,	7	-	-	-	-	-	1	2	1	-	-	1	-	-	-
70 to 75,	3	-	-	-	1	1	-	-	-	-	-	1	1	-	-
75 to 80,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Over 80,	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Unk.,	11	-	1	-	1	1	-	-	-	-	-	-	-	-	18

(C.) Second Marriage of the Male but First Marriage of the Female.

ALL AGES.	8,628	630	2345	2346	1504	1111	491	222	91	51	21	11	-	1	51
Und. 20,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 to 25,	294	92	146	51	2	1	1	-	-	-	-	-	-	-	1
25 to 30,	1,373	240	653	411	59	6	-	1	-	1	-	-	-	-	2
30 to 35,	1,870	156	728	722	310	11	5	-	-	-	-	-	-	-	4
35 to 40,	1,773	87	466	591	416	178	29	1	-	-	-	-	-	-	5
40 to 45,	1,210	27	209	363	301	218	74	15	2	1	-	-	-	-	2
45 to 50,	892	15	88	201	219	215	100	47	1	8	-	-	-	-	2
50 to 55,	530	8	32	74	111	138	89	50	30	1	-	-	-	-	-
55 to 60,	111	5	12	21	67	73	70	48	16	10	2	-	-	-	-
60 to 65,	177	1	1	7	18	31	41	11	21	14	7	2	-	1	1
65 to 70,	97	-	2	5	7	14	12	16	13	15	5	6	-	-	2
70 to 75,	11	-	2	-	1	1	5	7	5	11	3	1	-	-	-
75 to 80,	13	-	-	-	-	2	2	2	1	-	4	2	-	-	-
Over 80,	5	-	-	-	-	1	2	1	1	-	-	-	-	-	-
Unk.,	89	1	3	-	1	1	1	-	-	-	-	-	-	-	11

TABLE XVII.—DEATHS.—SIX YEARS—1865-70.

Distinguishing by Counties, by Months, and by Sex, the registered Number of Persons who have died during the Six Years, 1865-70; also for the entire State, the Percentage of the Numbers in each Month (distinguishing Sex), to the Total Number.

6 Years. Months.	SEX.	Percentage.	STATE.	Bathurst	Berkshire.	Bristol.	Dukes and Knicker.	Fox.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
{ 6 Years.	Totals,	100.00	151,547	8,097	5,753	10,539	953	19,880	3,102	7,959	4,103	27,671	10,359	6,664	32,365	19,102
	Males,	49.74	75,888	1,580	2,919	5,238	475	9,742	1,446	4,002	1,979	13,510	5,047	3,350	16,526	9,569
	Females,	50.10	75,920	1,497	2,804	5,286	478	10,100	1,647	3,943	2,108	14,138	5,294	3,295	15,832	9,498
	Unknown,	.16	244	20	30	15	-	38	9	14	16	23	18	19	7	35
{ Jan.	Totals,	7.81	11,886	219	426	880	71	1,580	242	573	295	2,229	821	534	2,546	1,420
	Males,	3.94	5,974	119	216	464	34	788	114	281	143	1,132	414	261	1,289	719
	Females,	3.86	5,851	99	210	416	37	790	128	292	152	1,094	405	272	1,257	699
	Unknown,	.01	11	1	-	-	-	2	-	-	-	3	2	1	-	2
{ Feb.	Totals,	7.51	11,381	251	432	810	73	1,489	206	565	258	2,145	800	470	2,456	1,426
	Males,	3.72	5,630	135	213	389	31	746	97	300	124	1,020	389	229	1,275	682
	Females,	3.78	5,736	115	217	419	42	743	107	265	134	1,124	410	239	1,180	741
	Unknown,	.01	15	1	2	2	-	-	2	-	-	1	1	2	1	3
{ Mar.	Totals,	8.39	12,714	256	481	821	95	1,659	258	684	395	2,297	820	634	2,772	1,542
	Males,	4.05	6,139	126	222	399	40	738	127	329	183	1,088	402	321	1,394	768
	Females,	4.33	6,554	126	257	421	55	918	129	353	210	1,208	416	313	1,378	770
	Unknown,	.01	21	2	2	1	-	8	2	2	2	1	2	-	-	4
{ Apr.	Totals,	7.64	11,580	224	435	828	80	1,429	194	623	334	1,993	784	598	2,571	1,487
	Males,	3.82	5,791	114	226	417	44	717	98	317	153	950	359	302	1,335	759
	Females,	3.81	5,772	109	206	411	36	711	96	304	180	1,041	424	295	1,236	723
	Unknown,	.01	17	1	8	-	-	1	-	2	1	2	1	1	-	5
{ May.	Totals,	7.55	11,448	207	420	793	100	1,487	252	594	321	1,976	790	532	2,529	1,442
	Males,	3.78	5,738	116	193	387	51	721	116	300	153	998	383	257	1,296	762
	Females,	3.77	5,703	91	226	406	49	764	133	294	168	978	406	275	1,233	680
	Unknown,	-	7	-	1	-	-	2	8	-	-	-	1	-	-	-

1870.]

DEATHS.

June	Totals,	6 65	10,075	233	380	650	53	1,300	212	509	268	1,902	708	458	2,148	1,259
	Males,	8 83	5,042	112	203	327	29	660	102	252	183	912	352	286	1,088	636
	Females,	8 81	5,011	119	176	321	24	636	110	255	134	987	848	221	1,058	622
	Unknown,	.01	22	2	1	2	-	4	-	2	1	3	3	1	2	1
July	Totals,	8 99	13,621	238	472	844	71	1,671	254	804	374	2,446	909	494	3,277	1,767
	Males,	4 58	6,936	129	242	408	37	833	121	419	180	1,244	450	263	1,683	927
	Females,	4 40	6,657	107	225	435	34	830	132	385	191	1,201	458	229	1,594	836
	Unknown,	.01	28	2	5	1	-	8	1	-	8	1	1	2	-	4
Aug.	Totals,	11 31	17,144	332	649	1,165	73	2,362	373	942	475	3,266	1,147	644	3,447	2,269
	Males,	5 70	8,629	169	356	588	40	1,146	160	483	222	1,633	570	323	1,798	1,141
	Females,	5 60	8,490	160	290	576	33	1,214	213	456	252	1,630	576	320	1,647	1,123
	Unknown,	.01	25	3	3	1	-	2	-	3	1	3	1	1	2	5
Sept.	Totals,	9 94	15,073	340	572	1,085	99	2,098	320	799	455	2,663	1,052	672	2,942	1,976
	Males,	4 90	7,434	176	287	546	53	1,060	138	387	235	1,243	503	330	1,507	969
	Females,	5 02	7,604	163	280	537	46	1,030	182	409	213	1,418	547	340	1,434	1,005
	Unknown,	.02	35	1	5	2	-	8	-	3	7	2	2	2	1	2
Oct.	Totals,	8 67	13,137	285	529	989	91	1,818	305	650	357	2,378	935	562	2,649	1,639
	Males,	4 33	6,565	135	268	474	46	904	147	336	168	1,164	459	291	1,340	833
	Females,	4 33	6,555	146	261	463	45	911	158	313	189	1,212	475	270	1,309	803
	Unknown,	.01	17	4	-	2	-	3	-	1	-	2	1	1	-	3
Nov.	Totals,	7 69	11,648	253	475	839	70	1,495	236	603	311	2,137	772	517	2,541	1,399
	Males,	3 75	5,674	117	243	410	27	712	113	297	161	1,013	354	258	1,297	672
	Females,	3 93	5,959	136	228	428	43	801	122	306	150	1,124	418	254	1,244	725
	Unknown,	.01	15	-	4	1	-	2	1	-	-	-	-	5	-	2
Dec.	Totals,	7 77	11,777	247	464	865	71	1,478	249	605	253	2,228	817	542	2,487	1,471
	Males,	3 81	5,768	121	240	420	38	703	113	299	121	1,108	407	275	1,224	699
	Females,	3 95	5,987	125	221	443	33	772	136	306	132	1,118	407	264	1,262	768
	Unknown,	.01	22	1	3	2	-	3	-	-	-	2	3	3	1	4
Not stated.	Totals,	.08	118	12	18	20	6	14	1	8	7	11	9	7	-	5
	Males,	.05	68	9	10	9	5	14	-	2	3	5	5	4	-	2
	Females,	.03	41	1	7	10	1	-	1	5	3	3	4	3	-	3
	Unknown,	-	9	2	1	1	-	-	-	1	1	3	-	-	-	-

TABLE XVIII.—DEATHS.—SIX YEARS—1865-70.

Distinguishing by Counties, by Age, and by Sex, the registered Number of Persons who have died during the Six Years, 1865-70; also for the entire State, the Percentage of the Numbers in each specified Age (distinguishing Sex), to the Total Number.

Age.	SEX.	Percentage.	STATE.	Barnstable.	Berkshire.	Bristol.	Dukes and Nantucket.	Essex.	Franklin.	Hampden.	Hampshire.	Middlesex.	Norfolk.	Plymouth.	Suffolk.	Worcester.
All Ages.	Totals,	100.00	151,547	3,097	5,753	10,539	953	19,880	3,102	7,959	4,103	27,671	10,359	6,664	32,365	19,102
	Males,	49.75	75,386	1,580	2,919	5,238	475	9,742	1,446	4,002	1,979	13,513	5,047	3,350	16,526	9,569
	Females,	50.09	75,917	1,497	2,804	5,286	478	10,100	1,647	3,943	2,108	14,135	5,294	3,295	15,832	9,498
	Unknown,	.16	244	20	30	15	-	38	9	14	16	23	18	19	7	35
Under 1.	Totals,	20.66	31,326	401	960	2,055	78	4,214	384	1,735	657	5,745	2,061	1,072	8,010	3,954
	Males,	11.20	16,981	221	542	1,118	49	2,259	199	941	353	3,140	1,080	590	4,305	2,184
	Females,	9.32	14,128	161	393	922	29	1,921	177	784	293	2,585	964	463	3,698	1,738
	Unknown,	.14	217	19	25	15	-	34	8	10	11	20	17	19	7	32
1 to 2.	Totals,	7.35	11,130	145	357	737	17	1,398	150	647	214	2,071	735	365	2,866	1,428
	Males,	3.82	5,782	81	212	384	10	744	69	311	93	1,072	377	187	1,496	741
	Females,	3.52	5,342	64	144	353	7	653	80	334	116	999	358	178	1,370	686
	Unknown,	.01	6	-	1	-	-	1	1	2	-	-	-	-	-	1
2 to 3.	Totals,	3.44	5,215	93	212	349	15	639	82	310	128	940	336	175	1,254	682
	Males,	1.78	2,692	51	120	191	5	313	34	152	64	502	154	92	646	368
	Females,	1.66	2,520	42	92	158	10	326	48	157	64	437	182	83	608	313
	Unknown,	-	3	-	-	-	-	-	-	1	-	1	-	-	-	1
3 to 4.	Totals,	2.26	3,422	47	124	230	11	481	49	179	77	611	237	128	828	420
	Males,	1.14	1,732	22	70	111	4	256	18	88	40	306	115	59	429	214
	Females,	1.12	1,688	25	54	119	7	224	31	91	37	305	121	69	399	206
	Unknown,	-	2	-	-	-	-	1	-	-	-	-	1	-	-	-

1870.]

DEATHS.

cxlvii

Totals,	.	1.58	2,995	95	94	168	13	324	89	128	41	484	165	79	598	282
Males,	.	.80	1,214	16	87	80	5	166	21	70	21	217	92	37	314	138
Females,	.	.78	1,181	19	57	88	8	158	18	53	20	217	73	42	284	144
Totals,	.	35.29	53,488	721	1,747	3,539	134	7,056	704	2,994	1,117	9,801	8,534	1,819	13,556	6,766
Males,	.	18.74	28,401	391	981	1,884	73	3,738	341	1,562	576	5,237	1,818	965	7,190	3,645
Females,	.	16.40	24,859	311	740	1,640	61	3,282	354	1,419	530	4,543	1,698	835	6,359	3,087
Unknown,	.	.15	228	19	26	15	-	36	9	13	11	21	18	19	7	34
Totals,	.	4.19	6,344	103	244	410	38	882	116	348	167	1,278	486	212	1,327	733
Males,	.	2.16	3,272	61	136	223	14	429	64	191	84	652	257	105	685	371
Females,	.	2.03	3,070	42	107	187	24	453	52	157	83	626	229	107	642	361
Unknown,	.	-	2	-	1	-	-	-	-	-	-	-	-	-	-	1
Totals,	.	2.21	3,349	73	167	240	21	449	87	177	88	606	231	145	577	488
Males,	.	1.07	1,621	33	85	101	7	198	35	111	44	303	107	66	299	232
Females,	.	1.14	1,728	40	82	139	14	251	52	66	44	303	124	79	278	256
Totals,	.	3.79	5,748	152	238	389	24	806	130	346	182	1,022	377	260	1,082	740
Males,	.	1.67	2,536	87	104	147	15	353	59	148	70	435	177	105	508	328
Females,	.	2.12	3,211	65	134	242	9	453	71	198	111	587	200	155	574	412
Unknown,	.	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-
Totals,	.	10.89	15,740	370	565	999	94	2,061	311	843	392	2,901	1,023	652	3,612	1,917
Males,	.	4.82	7,300	198	264	456	59	920	126	410	175	1,273	458	308	1,761	892
Females,	.	5.57	8,440	172	301	543	35	1,141	185	433	217	1,628	565	344	1,851	1,025
Totals,	.	8.29	12,565	241	427	782	69	1,561	219	627	351	2,428	826	495	3,104	1,435
Males,	.	3.82	5,783	108	181	354	40	687	99	264	155	1,085	355	235	1,587	633
Females,	.	4.47	6,782	133	246	428	29	874	120	363	196	1,343	471	260	1,517	802

TABLE XVIII.—Concluded.

[illegible]

1870.]

DEATHS.

cxlix

No. of Deaths.	{	Totals,	.	.	.05	78	2	8	5	2	6	3	2	1	19	5	2	11	12
		Males,	.	.	.02	24	1	2	1	-	1	-	-	-	6	2	1	4	6
		Females,	.	.	.03	54	1	6	4	2	5	3	2	1	13	3	1	7	6
No. of Deaths.	{	Totals,	.	.	.61	925	29	89	93	7	241	23	52	58	150	75	24	15	69
		Males,	.	.	.35	537	20	49	51	3	190	11	25	26	65	48	11	4	34
		Females,	.	.	.25	376	8	38	42	4	49	12	26	28	83	27	13	11	35
No. of Deaths.	{	Unknown,	.	.	.01	12	1	2	-	-	2	-	1	4	2	-	-	-	-

APPENDIX.

L A W S

CONCERNING THE REGISTRATION OF BIRTHS, MARRIAGES AND DEATHS.

[General Statutes—Chapter 21.]

OF THE REGISTRY AND RETURNS OF BIRTHS, MARRIAGES, AND DEATHS

SECTION

1. City and Town Clerks to obtain, record, and index facts concerning Births, Marriages, and Deaths.
2. Parents and others to give notice of Births, and Deaths.
3. Physicians to give Certificate of Cause of Death, when requested. Penalty.
4. Sextons, Undertakers, &c., to make returns to Clerks of Cities and Towns. Clerks to give Certificate of Registry of Death to the Person having charge of funeral rites *preliminary* to Interment, for delivery, &c. If Interment takes place without such Certificate, notice thereof to be given, under penalty of twenty dollars.
5. Clerk annually to transmit certified Copies of Records to Secretary.

SECTION

6. Record or Certificate of Clerk to be *prima facie* evidence in Legal Proceedings.
7. Clerks—Fees of, payable by City or Town; Accounts of, to be certified by Secretary. Penalty for neglect of duty.
8. Superintendents of State Almshouses to record and return to Secretary, births and deaths therein.
9. Secretary to furnish Blank Books for Records and Forms for returns, with Instructions. Clerks to distribute the Blank Forms for Returns.
10. Secretary,—to cause Returns to be bound, &c.; to Report annually to Legislature, &c.; to do all other acts necessary to secure the execution of the provisions of this chapter.
11. Registrars may be chosen, in certain cases, in place of Town Clerks.

SECTION 1. The clerk of each city and town shall receive or obtain, and record, and index, the following facts concerning the births, marriages, and deaths, therein, separately numbering and recording the same in the order in which he receives them, designated in separate columns:

In the record of births, the date of the birth, the place of birth, the name of the child, (if it have any,) the sex and color of the child, the names and the places of birth of the parents, the occupation of the father, the residence of the parents, and the date of the record;

In the record of marriages, the date of the marriage, the place of marriage, the name, residence and official station of the person by whom married, the names and places of birth of the parties, the residence of each, the age and color of each, the condition of each, (whether single or widowed,) the occupation, the names of the parents, and the date of the record;

In the record of deaths, the date of the death, the name of the deceased, the sex, the color, the condition, (whether single, widowed, or married,) the age, the residence, the occupation, the place of death, the place of birth, the names and places of birth of the parents, the disease or cause of death, the place of burial, and the date of the record.

SECTION 2. Parents shall give notice to the clerk of their city or town of the births and deaths of their children; every householder shall give like notice of every birth and death happening in his house; the eldest person next of kin shall give such notice of the death of his kindred; the

keeper of a workhouse, house of correction, prison, hospital, or almshouse, except the State almshouses at Tewksbury, Bridgewater, and Monson, and the master or other commanding officer of any ship shall give like notice of every birth and death happening among the persons under his charge. Whoever neglects to give such notice for the space of six months after a birth or death, shall forfeit a sum not exceeding five dollars.

SECTION 3. Any physician having attended a person during his last illness, shall—when requested within fifteen days after the decease of such person—forthwith furnish for registration a certificate of the duration of the last sickness, the disease of which the person died, and the date of his decease, as nearly as he can state the same. If any physician refuses or neglects to make such certificate, he shall forfeit and pay the sum of ten dollars to the use of the town in which he resides.

SECTION 4. Every sexton, undertaker, or other person having charge of a burial-ground, or the superintendent of burials having charge of the obsequies or funeral rites preliminary to the interment of a human body, shall forthwith obtain and return to the clerk of the city or town in which the deceased resided or the death occurred, the facts required by this chapter to be recorded by said officer concerning the deceased, and the person making such return shall receive from his city or town the fee of ten cents therefor.

The clerk, upon recording such facts, shall forthwith give to the person making such return, a certificate that such return has been made, which certificate such person shall deliver to the person having charge of the interment, if other than himself, before the burial when practicable, otherwise within seven days thereafter. When a burial takes place and no certificate is delivered as aforesaid, the sexton, undertaker, or other person having charge of the interment, shall forthwith give notice thereof to the clerk under penalty of twenty dollars.

SECTION 5. The clerk of each city and town shall annually on or before the first day of February, transmit to the secretary of the Commonwealth, certified copies of the records of the births, marriages, and deaths, which have occurred therein during the year ending on the last day of the preceding December.

SECTION 6. The record of the town clerk relative to any birth, marriage, or death, shall be *prima facie* evidence, in legal proceedings, of the facts recorded. The certificate signed by the town clerk for the time being shall be admissible as evidence of any such record.

SECTION 7.* The clerk shall receive from his city or town for obtaining, recording, indexing, and returning to the secretary of the Commonwealth, the facts in relation to a birth, twenty cents; a marriage, ten cents; a death, twenty cents for each of the first twenty entries, and ten cents for each subsequent entry, as the same shall be certified by the secretary of the Commonwealth; but a city or town containing more than ten thousand inhabitants may limit the aggregate compensation allowed to their clerk. He shall forfeit a sum not less than twenty nor more than one hundred dollars for each refusal or neglect to perform any duty required of him by this chapter.

SECTION 8. The superintendents of the State almshouses at Tewksbury, Bridgewater, and Monson, shall obtain, record, and make return of

* See chap. 128, on p. clv, following.

the facts in relation to the births and deaths which occur in their respective institutions, in like manner as is required of town clerks. The clerks of said towns shall, in relation to the births and deaths of persons in said almshouses, be exempt from the duties otherwise required of them by this chapter.

SECTION 9. The secretary shall, at the expense of the Commonwealth, prepare and furnish to the clerks of the several cities and towns, and to the superintendents of the State almshouses, blank books of suitable quality and size to be used as books of record under this chapter, blank books for indexes thereto, and blank forms for returns, on paper of uniform size; and shall accompany the same with such instructions and explanations as may be necessary and useful. City and town clerks shall make such distribution of blank forms of returns furnished by the secretary as he shall direct.

SECTION 10. The secretary shall cause the returns received by him for each year to be bound together in one or more volumes with indexes thereto. He shall prepare from the returns such tabular results as will render them of practical utility, make report thereof annually to the legislature, and do all other acts necessary to carry into effect the provisions of this chapter.

SECTION 11. Any city or town containing more than ten thousand inhabitants, may choose a person other than the clerk to be registrar, who shall be sworn, and to whom all the provisions of this chapter concerning clerks shall apply. The returns and notices required to be made and given to clerks shall be made and given to such registrar under like penalties.

SECTION 12. The secretary of this Commonwealth shall prosecute, by an action of tort, in the name of the Commonwealth, for the recovery of any penalty or forfeiture imposed by this chapter.

SECTION 13. Any city or town may make rules and regulations to enforce the provisions of this chapter, or to secure a more perfect registration of births, marriages, and deaths, therein.

[General Statutes—Chapter 106.]

OF MARRIAGE.

SECTION

- 7. Notice of Intention of Marriage to be entered with Town Clerk.
- 8. Certificate of Record of Intention to be given to Parties by Clerk. Such certificate to be delivered to Person before whom Marriage is to be solemnized.
- 9. Certificate not to issue to certain Minors, except on application of Parent, &c. Penalty.
- 10. Clerk may require Affidavit of Age.
- 11. Penalty for making False Statement.
- 12. Parties living in State and Married out of it, to file certificate on return. Penalty.
- 13. No Person to solemnize Marriage of a Minor, without consent of Parents, if any in the State competent to act.

SECTION

- 14. Marriages, by Whom to be solemnized, and in what Place.
- 15. Marriages among Quakers.
- 16. Persons solemnizing Marriage to keep Record and to make Returns to certain Town Clerks. Clerk to record all Marriages so returned.
- 17. Penalty for not making Returns.
- 18. Penalty for solemnizing a Marriage unlawfully.
- 19. Penalty, on Person not authorized to Marry.
- 21. Record of Marriage, or certified copy thereof, presumptive evidence of Marriage.

SECTIONS 1, 2 and 3. [Marriage between certain relatives prohibited.]

SECTION 4. [Polygamy forbidden.]

SECTION 5. [Marriage contracted by insane persons or idiots, void.]

SECTION 6. [Marriages of persons marrying out of the State in order to evade, &c, void.]

SECTION 7. Persons intending to be joined in marriage, shall, before their marriage cause notice thereof to be entered in the office of the clerk, or registrar of the city or town in which they respectively dwell, if within the State. If there is no such clerk or registrar in the place of their residence, the entry shall be made in an adjoining city or town.

SECTION 8. The clerk or registrar shall deliver to the parties a certificate under his hand, specifying the time when notice of the intention of marriage was entered with him, together with all facts in relation to the marriage required by law to be ascertained and recorded, except those respecting the person by whom the marriage is to be solemnized. Such certificate shall be delivered to the minister or magistrate in whose presence the marriage is to be contracted, before he proceeds to solemnize the same.

SECTION 9. If a clerk or registrar issues such certificate to a male under the age of twenty-one years, or a female under the age of eighteen years, having reasonable cause to suppose the person to be under such age, except upon the application or consent in writing of the parent, master, or guardian, of such person, he shall forfeit a sum not exceeding one hundred dollars; but if there is no parent, master, or guardian, in this State, competent to act, a certificate may be issued without such application or consent.

SECTION 10. The clerk or registrar may require of any person applying for such certificate, an affidavit sworn to before a justice of the peace for the county where the application is made, setting forth the age of the parties; which affidavit shall be sufficient proof of age to authorize the issuing of the certificate.

SECTION 11. Whoever applying for such certificate wilfully makes a false statement in relation to the age or residence, parent, master, or guardian, of either of the parties intending marriage, shall forfeit a sum not exceeding two hundred dollars.

SECTION 12. When a marriage is solemnized in another State between parties living in this State, and they return to dwell here, they shall, within seven days after their return, file with the clerk or registrar of the city or town, where either of them lived at the time, a certificate or declaration of their marriage, including the facts concerning marriages required by law, and for every neglect they shall forfeit ten dollars.

SECTION 13. No magistrate or minister shall solemnize a marriage, having reasonable cause to suppose either of the parties to be under the age mentioned in section nine, without the consent of the parent or guardian having the custody of the minor, if there is any in the State competent to act.

SECTION 14. Marriages may be solemnized by a justice of the peace in the county for which he is appointed, when either of the parties resides in the same county; and throughout the State by any minister of the gospel ordained according to the usage of his denomination, who resides within the State and continues to perform the functions of his office; but all marriages shall be solemnized in the city or town in which the person solemnizing them resides, or in which one or both of the persons to be married reside.

SECTION 15. Marriages among the people called Friends or Quakers may be solemnized in the manner heretofore used and practised in their societies.

SECTION 16. Every justice of the peace, minister, and clerk, or keeper of the records of the meeting wherein any marriages among the Friends or Quakers are solemnized, shall make a record of each marriage solemnized before him, together with all facts relating to the marriage required by law

to be recorded. He shall also between the first and tenth days of each month return a copy of the record for the month next preceding, to the clerk or registrar of the city or town in which the marriage was solemnized, and shall when neither of the parties to a marriage resides in the city or town in which the marriage is solemnized, return a copy of the record of such marriage to the clerk or registrar of the city or town in which one or both of said parties reside. All marriages so returned shall be recorded by the clerk or registrar.

SECTION 17. Every person neglecting to make the returns required by the preceding section, shall forfeit for each neglect not less than twenty nor more than one hundred dollars.

SECTION 18. A justice of the peace or minister who joins persons in marriage contrary to the provisions of this chapter, knowing that the marriage is not duly authorized, shall forfeit not less than fifty nor more than one hundred dollars.

SECTION 19. Whoever undertakes to join persons in marriage knowing that he is not authorized so to do, shall be imprisoned in the jail or confined to hard labor for a term not exceeding six months, or pay a fine of not less than fifty nor more than two hundred dollars.

SECTION 20. [Unintentional informality does not invalidate marriage in other respects lawful.]

SECTION 21. The record of a marriage, made and kept as prescribed by law by the person before whom the marriage is solemnized, or by the clerk or registrar of any city or town, or a copy of such record duly certified, shall be received in all courts and places as presumptive evidence of such marriage.

SECTION 22. [Admission of respondent, general repute, &c., competent evidence to prove the fact of marriage.]

SECTION 23. [Marriage in foreign countries by a consul or diplomatic agent valid, and certificate of such consul or agent presumptive evidence thereof.]

[General Statutes—Chapter 29.]

OF THE PUBLIC RECORDS.

SECTION 10. [County, city and town records and files may be inspected and copied.]

SECTION 13. [Penalties; for altering or mutilating any record, paper, or written document, a sum not exceeding fifty dollars, —for wrongfully detaining records, and other documents, fifty dollars.]

[General Statutes—Section 1 of Chapter 174.]

Sentence when no punishment is provided.

SECTION 1. In cases of legal conviction, where no punishment is provided by statute, the court shall award such sentence as is conformable to the common usage and practice in this State, according to the nature of the offence, and not repugnant to the constitution.

[Chapter 138.]

AN ACT CONCERNING THE REGISTRY AND RETURN OF MARRIAGES, BIRTHS AND DEATHS.

SECTION 1. The clerk of each city and town, (except in such cities and towns as choose a registrar, under the eleventh section of the twenty-first chapter of the General Statutes, in which cases the provisions of this act shall apply to the registrar,) for receiving or obtaining, recording, indexing and returning the facts relating to marriages, births and deaths occurring therein, shall be entitled to receive therefrom the sums following, viz. : for each marriage, fifteen cents ; for each birth, thirty cents ; for each death returned to him by the persons specified in sections two, three and four of chapter twenty-one of the General Statutes, twenty cents for each of the first twenty entries, and ten cents for each subsequent entry ; for each death not so returned, but by him obtained and recorded, twenty cents.

SECTION 2. Chapter ninety-six of the acts of the year eighteen hundred and sixty-five, and so much of section seven of the twenty-first chapter of the General Statutes as is inconsistent herewith, are hereby repealed.

SECTION 3. This act shall take effect upon its passage.

[Approved April 7, 1866.]

[Chapter 58.]

AN ACT RELATING TO THE MARRIAGE OF NON-RESIDENT PARTIES.

SECTION 1. Persons living without the Commonwealth and intending to be joined in marriage within the Commonwealth, shall, before their marriage, cause notice of their intention to be entered in the office of the clerk or registrar of the city or town in which they propose to have the marriage solemnized ; and no marriage between such parties shall be solemnized until they have delivered to the justice of the peace, or minister in whose presence the marriage is to be contracted, a certificate from such clerk or registrar, specifying the time when notice of the intention of marriage was entered with him, together with all the facts in relation to the marriage required by law to be ascertained and recorded, except those respecting the person by whom the marriage is to be solemnized.

SECTION 2. Marriages may be solemnized by a justice of the peace in the county for which he is appointed.

SECTION 3. A justice of the peace or minister who joins persons in marriage contrary to the provisions of this act shall forfeit not less than fifty nor more than one hundred dollars.

[Approved March 11, 1867.]

STATISTICAL NOSOLOGY

ADOPTED FOR REGISTRATION IN MASSACHUSETTS.

The following plan of a Nomenclature and Classification of Diseases does not essentially differ from that authorized by the Registrar-General of England, to be used in the preparation of the “Weekly Return of Births and Deaths in London,” and is also, with slight modifications, identical with that embodied in a report drawn up by William Farr, Esq., M. D., of London, for the consideration of the International Statistical Congress which met at Paris in September, 1855; which report was printed in the Appendix to the Sixteenth Registration Report of the Registrar-General, England.

[NOTE.—This page and those that follow contain two lists of causes of death. The first,—that on the left side,—may be called the TABULAR LIST, and comprises all the heads which it is proposed to admit into the complete tables (IX. and X.) and under which ALL deaths, from whatever cause are finally distributed. It represents those diseases which, under the same terms, or terms strictly synonymous with them, are found in practice to occur most frequently.

The SUPPLEMENTAL LIST is *subordinate* to the first, and contains the principal *special* diseases which it may be considered desirable to note. The figures in this list indicate the corresponding heads of the tabular list under which such diseases are ultimately arranged.

Table VIII. includes both the Tabular and Supplementary lists; Tables IX. and X. the Tabular list only.]

CAUSES OF DEATH.

TABULAR LIST.						SUPPLEMENTAL LIST.					
CLASS I. ZYMOTIC DISEASES.						<i>Of Diseases of Special Character, or rarely fatal.</i>					
ORDER I.— <i>Miasmatic.</i>											
I.	1.—1.	Smallpox,	.	.	.	I.	1.—1.	Vaccination not stated.			
	2.	Measles,	.	.	.			Smallpox, (2d attack.)			
	3.	Scarlatina,	.	.	.			After vaccination.			
	4.	Diphtheria,	.	.	.			Erysipelas, &c., after vaccination.			
	5.	Quinsy,	.	.	.			Chickenpox.			
	6.	Croup,	.	.	.			Miliaria.			
	7.	Whooping Cough,	.	.	.		3.	Angina maligna.			
	8.	Typhus (and Infantile Fever,)	.	.	.		4.	Mumps.			
	9.	Erysipelas,	.	.	.		8.	Typhoid fever.			
	10.	Metria (or Puerperal Fever,)	.	.	.		9.	Phlebitis.			
	11.	Carbuncle,	.	.	.			Pyemia.			
	12.	Influenza,	.	.	.			Hospital gangrene.			
	13.	Dysentery,	.	.	.			Erythema.			
	14.	Diarrhœa,	.	.	.						
	15.	Cholera Infantum,	.	.	.						
	16.	Cholera,	.	.	.						
	17.	Ague,	.	.	.						
	18.	Remittent Fever,	.	.	.		18.	Yellow fever.			
	19.	Rheumatism,	.	.	.		19.	Rheumatism, with pericarditis, or disease of heart.			

CAUSES OF DEATH—(CONTINUED.)

TABULAR LIST.	SUPPLEMENTAL LIST.
<p>CLASS I.—(Continued.)</p> <p>ORDER 2.—<i>Enthetic.</i></p> <p>I. 2.—1. Syphilis,</p> <p>2. Stricture of Urethra,</p> <p>3. Hydrophobia,</p> <p>4. Glanders,</p> <p>ORDER 3.—<i>Dietic.</i></p> <p>I. 3.—1. Privation,</p> <p>2. Purpura and Scurvy,</p> <p>3. Delirium tremens, } (Alcoholism,) .</p> <p>4. Intemperance, } .</p> <p>ORDER 4.—<i>Parasitic.</i></p> <p>I. 4.—1. Thrush,</p> <p>2. Worms, &c.,</p>	<p>ORDER 2.—</p> <p>I. 2.—1. Gonorrhœa.</p> <p>Purulent ophthalmia.</p> <p>4. Malignant pustule.</p> <p>Necusis, (usually from dissection wounds.)</p> <p>ORDER 3.—</p> <p>I. 3.—1. Want of Breast Milk.</p> <p>2. Rickets.</p> <p>Bronchocele.</p> <p>ORDER 4.—</p> <p>I. 4.—2. Porrigio.</p> <p>Scabies.</p> <p>Tape worm.</p> <p>Hydatids.</p>
<p>CLASS II. CONSTITUTIONAL DISEASES.</p> <p>ORDER 1.—<i>Diathetic.</i></p> <p>II. 1.—1. Gout,</p> <p>2. Dropsy and Anæmia,</p> <p>3. Cancer,</p> <p>4. Noma (or Canker,)</p> <p>5. Mortification,</p> <p>ORDER 2.—<i>Tubercular.</i></p> <p>II. 2.—1. Scrofula,</p> <p>2. Tabes Mesenterica,</p> <p>3. Phthisis (Consumption of Lungs,) .</p> <p>4. Hydrocephalus,</p>	<p>ORDER 1.—</p> <p>II. 1.—3. Soft cancer.</p> <p>Sweep's cancer.</p> <p>Melanosis.</p> <p>Other kinds of cancer.</p> <p>Polypus (part not stated.)</p> <p>Lupus.</p> <p>5. Bed-sore.</p> <p>Dry gangrene.</p> <p>ORDER 2.—</p> <p>II. 2.—1. Psoas (lumbar) abscess.</p> <p>White swelling.</p> <p>Cretinism.</p> <p>2. Tubercular peritonitis.</p> <p>3. Hæmoptysis.</p> <p>4. Tubercular meningitis.</p>
<p>CLASS III. LOCAL DISEASES.</p> <p>ORDER 1.—<i>Nervous System.</i></p> <p>III. 1.—1. Cephalitis,</p> <p>2. Apoplexy,</p> <p>3. Paralysis,</p> <p>4. Insanity,</p> <p>5. Chorea,</p> <p>6. Epilepsy,</p> <p>7. Tetanus,</p> <p>8. Convulsions,</p> <p>9. Brain Diseases,* &c.,</p>	<p>ORDER 1.—</p> <p>III. 1.—1. Myelitis.</p> <p>4. Monomania.</p> <p>Fright.</p> <p>Grief.</p> <p>Melancholia.</p> <p>Rage.</p> <p>6. Hysteria.</p> <p>8. Laryngismus stridulus.</p> <p>9. Neuralgia.</p> <p>Ophthalmia.</p> <p>Otitis.</p> <p>Disease of spinal marrow.</p> <p>Necrencephalus. (Softening of Brain.)</p>

* Other diseases of the brain, or diseases of the nervous system, *not otherwise distinguished*, are referred to this head. *Mutatis mutandis*, the note applies to the corresponding heads in other Orders of this Class.

CAUSES OF DEATH—(CONTINUED.)

TABULAR LIST.	SUPPLEMENTAL LIST.
CLASS III.—(Continued.)	
ORDER 2.— <i>Organs of Circulation.</i>	
III. 2.—1. Pericarditis,	III. 2.—1. Carditis.
2. Aneurism,	Endocarditis.
3. <i>Heart Diseases,* &c.,</i>	3. Hypertrophia.
	Angina pectoris.
	Syncope.
	Arteritis.
	Hydropericardium.
ORDER 3.— <i>Respiratory Organs.</i>	
III. 3.—1. Epistaxis,	III. 3.—2. Cedema glottidis.
2. Laryngitis,	4. Empyema.
3. Bronchitis,	Hydrothorax.
4. Pleurisy,	Diaphragmitis.
5. Pneumonia,	Pneumothorax.
6. Asthma,	5. Pulmonary apoplexy.
7. <i>Lung Diseases,* &c.,</i>	6. Grindler's Asthma.
	Miner's Asthma.
	Emphysema.
ORDER 4.— <i>Digestive Organs.</i>	
III. 4.—1. Gastritis,	III. 4.—1. Glossitis.
2. Enteritis,	Stomatitis.
3. Peritonitis,	Pharyngitis.
4. Ascites,	Esophagitis.
5. Ulceration of Intestines,	5. Perforation of—
6. Hernia,	6. Congenital.
7. Ileus,	Femoral.
8. Intussusception,	Inguinal.
9. Stricture of Intestines,	Scrotal.
10. Fistula,	Umbilical.
11. <i>Stomach Diseases,* &c.,</i>	Ventral.
12. <i>Pancreas Disease,* &c.,</i>	7. Constipation.
13. Hepatitis,	11. Dyspepsia.
14. Jaundice,	Pyrosis.
15. <i>Liver Disease,* &c.,</i>	Gastralgia.
16. <i>Spleen Disease,* &c.,</i>	Hæmatemesia.
	Melæna.
	Hæmorrhoids.
	14. Gall-stones.
	15. Cirrhosis.
ORDER 5.— <i>Urinary Organs.</i>	
III. 5.—1. Nephritis,	III. 5.—6. Cystirrhœa.
2. Ischuria,	7. Diuresis.
3. Nephria, (Bright's disease,)	Hæmaturia.
4. Diabetes,	Dis. of prostate.
5. Calculus, (Gravel, &c.,)	Dis. of bladder.
6. Cystitis,	
7. <i>Kidney Disease,* &c.,</i>	
ORDER 6.— <i>Generative Organs.</i>	
III. 6.—1. Ovarian Dropsy,	III. 6.—1. Ovarian tumor.
2. <i>Disease of Uterus,* &c.,</i>	2. Hysteritis, (Inflammation of womb.)
	Uterine tumor.
	Polypus uteri.
	Orchitis.
	Hydrocele.

* See Note under III. 1.—9.

CAUSES OF DEATH—(CONTINUED.)

TABULAR LIST.	SUPPLEMENTAL LIST.
<p>CLASS III.—(Continued.)</p> <p>ORDER 7.—<i>Organs of Locomotion.</i></p> <p>III. 7.—1. Arthritis,</p> <p>2. <i>Joint Disease,* &c.,</i></p> <p>ORDER 8.—<i>Integumentary System.</i></p> <p>III. 8.—1. Phlegmon,</p> <p>2. Ulcer,</p> <p>3. <i>Skin Diseases,* &c.,</i></p>	<p>III. 7.—1. Ostitis. Periostitis.</p> <p>2. Fragilitas ossium. Mollities ossium. Caries. Necrosis. Exostosis.</p> <p>III. 8.—1. Abscess (part not stated.) Boil. Whitlow.</p> <p>3. Roscola. Urticaria. Eczema. Herpes. Pemphigus. Ecthyma. Impetigo. Psoriasis. Ichthyosis. Tumor (part not stated.)</p>
<p>CLASS IV. DEVELOPMENTAL DISEASES.</p> <p>ORDER 1.—<i>Developmental Diseases of Children.</i></p> <p>IV. 1.—1. Stillborn,</p> <p>2. Premature Birth and Infantile Debility,</p> <p>3. Cyanosis,</p> <p>4. Spina Bifida,</p> <p>5. Other Malformations,</p> <p>6. Teething,</p> <p>ORDER 2.—<i>Developmental Diseases of Women.</i></p> <p>IV. 2.—1. Paramenia,</p> <p>2. Childbirth. (<i>See Metria I. 1.—9.</i>)</p> <p>ORDER 3.—<i>Developmental Diseases of Old People.</i></p> <p>IV. 3.—1. Old Age,</p> <p>ORDER 4.—<i>Diseases of Nutrition.</i></p> <p>IV. 4.—1. Atrophy and Debility,</p>	<p>IV. 1.—2. Atelectasis. 5. Anus imperforatus. Cleft palate. Idiocy.</p> <p>IV. 2.—1. Chlorosis. Climacteria. Menorrhagia.</p> <p>2. Miscarriage. Abortion. Puerperal mania. Puerperal convulsions. Phlegmasia dolens. Caesarian operation. Extra-uterine foetation. Flooding. Retention of placenta. Presentation of placenta. Deformed pelvis. Breast abscess.</p>

* See Note under III. 1.—9.

CAUSES OF DEATH—(CONCLUDED.)

TABULAR LIST.	SUPPLEMENTAL LIST.
<div>CLASS V. VIOLENT DEATHS.</div> <div>ORDER 1.—<i>Accident or Negligence.</i></div> <div>V. 1.—1. Fractures and Contusions,*</div> <div>2. Wounds,</div> <div>3. Burns and Scalds,</div> <div>4. Poison,</div> <div>5. Drowning,</div> <div>6. Suffocation,</div> <div>7. Otherwise,</div> <div>ORDER 2.—<i>In Battle.</i></div> <div>ORDER 3.—<i>Homicide.</i></div> <div>ORDER 4.—<i>Suicide.</i></div> <div>V. 4.—1. Wounds,</div> <div>2. Poison,</div> <div>3. Drowning,</div> <div>4. Hanging,</div> <div>5. Otherwise,</div> <div>ORDER 5.—<i>Execution.</i></div> <div>V. 5.—1. Hanging,</div> <div>V. 6.—Violent Deaths, not classed, (“cas-</div> <div>ualty,”)</div> <div>Sudden, cause unascertained,</div>	<div>V. 1.—1. Railroad accidents.</div> <div>5. Lost at sea.</div> <div>6. Asphyxia.</div> <div>Strangulation.</div> <div>7. Exposure.</div> <div>Cold water.</div> <div>Frozen.</div> <div>Heat.</div> <div>Lightning.</div> <div>Surgical operation.</div>

* Including “Railroad Accidents.”

NOTE.—Cases of “infantile fever” are classed with those of typhoid, relapsing, and other continued fevers, under one name “typhus.” Cases of “rheumatic fever” are classed with “rheumatism;” of “hemorrhage,” and “abscess,” with the diseases of the organs affected. Cases of “neglect” and “cold,” except when the result of privation, (Class I. 3.—1,) are placed (with notes) under deaths by “accident or negligence,” (V. 1.—7.) As “stricture of the urethra” is almost invariably the result of gonorrhoea, it is classed as I. 2.—2.

THIRTY-FIFTH ANNUAL REPORT

OF THE

BOARD OF EDUCATION,

TOGETHER WITH THE

THIRTY-FIFTH ANNUAL REPORT

OF THE

SECRETARY OF THE BOARD.

BOSTON:

WRIGHT & POTTER, STATE PRINTERS, No. 79 MILK STREET
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1872.

CONTENTS.

	Page.
I. REPORT OF BOARD OF EDUCATION,	5-14
II. REPORTS OF VISITORS OF THE NORMAL SCHOOLS,	15-30
1. At Framingham,	15
2. At Westfield,	18
3. At Bridgewater,	22
4. At Salem,	28
III. REPORT OF TREASURER OF THE BOARD,	32-37
IV. CLARKE INSTITUTION FOR DEAF-MUTES,	40-55
V. AMERICAN ASYLUM AT HARTFORD, CONN.,	58-68
VI. BOSTON SCHOOL FOR DEAF MUTES,	70-77
VII. REPORT OF THE GENERAL AGENT OF THE BOARD,	80-92
VIII. REPORT OF THE SECRETARY OF THE BOARD,	94-132
IX. APPENDIX TO REPORT OF SECRETARY,	133
A. Papers relating to Industrial Drawing,	134-153
B. Tables showing percentage of school-tax on valuation of 1871, etc.,	154-164
C. Half-mill State School Fund Tax,	165-173
X. ABSTRACTS OF SCHOOL COMMITTEES' REPORTS,	1-287

APPENDIX.

XI. ABSTRACT OF SCHOOL COMMITTEES' RETURNS,	i-xciv
1. Tabular statement of Returns,	ii
Recapitulation,	lvi
2. Evening Schools,	lix
3. Reformatory and other State Schools,	lx
4. Graduated Tables, 1st, 2d and 3d Series,	lxi-xciv
XII. INDEXES,	cvii

ERRATA.

32d page, 2d line from the top, by mistake in transferring, the sum given is \$5,382.79, instead of \$5,882.79.

34th page, 11th line of figures from the top, the sum should be \$220.00, instead of \$222.00.

53d page of Appendix, 8th column of figures, last line but one, 2,500 was omitted in transferring.

ANNUAL REPORT.

The Board of Education respectfully submits to the legislature its Thirty-Fifth Annual Report, the Reports of the Visitors of the Normal Schools, and of the Treasurer, Secretary, and General Agent.

This Board, in the fulfilment of the duties imposed upon it of making suggestions as to the most practical means of improving and extending the efficiency of the system of popular education, has, at different times, urged upon the legislature the necessity of a thorough supervision of the Common Schools. It has been truly said that "the most important branch of administration, as connected with education, relates to school inspection." This subject was fully discussed in the report of the Secretary for 1869, and has been referred to in subsequent reports of the Board and Secretary. Their suggestions have been partially adopted, and the necessity of such supervision has been so far recognized that most of the cities and several of the large towns of the Commonwealth employ a superintendent of schools. This agency is "now exerting a more powerful influence than any other instrumentality in perfecting the character and giving efficiency to the schools." It has been introduced into most of our sister States, with equally beneficial results. While the benefits of the system are enjoyed by over forty cities and towns, the remaining number do not employ a superintendent. Most of them cannot afford the expense, but these very towns are the ones that most need such supervision, for the small towns cannot obtain as able and experienced teachers as the larger and wealthier places, and they have fewer persons of literary attainments able to devote their time and talents to these duties. They are also more heavily taxed in proportion to their valuation than the large cities. The last general court made an appropriation of

\$10,000 for the salary and expenses of agents who should undertake this work of supervision. It therefore became the duty of the Board to carry out the policy thus inaugurated, so that every town, however poor or however small, might enjoy the benefits of the system. It has been found difficult to procure gentlemen possessing the requisite qualifications for the duties.

A special agent was appointed by the Board in July last, as the director of art education, and is now engaged in the work of aiding the cities and towns in carrying out the requirements of the law of 1870 relating to the teaching of drawing in the Public Schools and the establishment of Evening Schools for the instruction of adult persons in mechanical drawing. His labors thus far have met with gratifying success.

A special agent has also been engaged for a limited time to visit the schools in the western counties, who is doing a good work, and it is hoped that others may soon be put into the field. If the plan meets with the success which is confidently anticipated, it will gradually lead to the establishment of a system of local county or district agents. These will not assume any of the powers now possessed by the school committees or relieve them of any of their duties, but coöperate with them whenever their services are required, by suggesting plans and locations for school-houses, organizing schools, conferring with the teachers, holding meetings for discussion of topics appertaining to their labor, and advising in the classification and grading of schools.

It is not enough, however, to provide superintendents and school-houses and to require compulsory attendance, unless the teachers are qualified for their work. None of us employ an agent or servant to perform a service, who has not some experience or qualification for the position, yet we constantly hire persons to teach our children, who have never had any training or instruction in the theory and art of teaching. The State has built and partially equipped four Normal Schools for the preparation of teachers. The school buildings at Salem and Bridgewater were enlarged last year and now will seat 200 pupils each. Boarding-houses have been recently erected at Bridgewater and Framingham, which have been productive of great good, in cheapening the price of board and thereby increasing the number of pupils and bringing them more immediately under the care of the principals. The school at Bridgewater has increased so rap-

idly, that there is now the same need for enlarging the boarding-house that there was for its construction. The school at Westfield languishes for want of a boarding-house, more than half of the pupils being compelled to board themselves. The house at Bridgewater should be enlarged, and a new one constructed at Westfield the present year.

The last general court established a fifth Normal School at Worcester. The ground has been selected, plans agreed upon and contracts partially made, and it is expected that the buildings will be ready for occupancy before another year. The benefits that have resulted from the establishment of Normal Schools are so fully appreciated that nothing need be said in their behalf. Between 900 and 1,000 pupils can be taught in these schools, and more than 200 graduated every year.

While the Normal Schools are performing a most valuable service in raising the standard of teaching throughout the whole Commonwealth, their capacity to educate trained teachers has hardly kept pace with the increase of population, and is rapidly falling short of meeting the great increase in the demand for such teachers.

But though more Normal Schools are required, a sufficient number for the training of all our teachers could not be provided, except by a large permanent annual expenditure; nor would this answer the purpose, for a large proportion of the teachers could not afford the time and expense required to graduate, and, moreover, teachers need different degrees and kinds of training for different grades and descriptions of schools. Some other system must be devised. Two plans have been suggested. One contemplates the establishment of several Normal Schools, with a course of three or six months, devoted to a strictly professional course of instruction in the art of organizing, governing and instructing schools. From four to six hundred teachers could be trained yearly in each of these, at an expense not much greater than is now required at the Normal Schools, and they would be much better fitted for their work than are the present large number of teachers who lack special training. This plan has been fully elaborated by one of the best educators in our country, and his recommendation is sufficient to entitle it to the most careful consideration. There are some decided advantages in introducing normal instruction into the High Schools and Academies. These

schools are in successful operation in locations where the pupils live and the teachers are needed. No additional expense would be required for the construction and maintenance of the schools, and a department for this branch of education can be as well established there as in separate schools.

With the view of furnishing teachers of their own schools, several of the cities and large towns have made provision for giving normal instruction to such pupils of the High Schools as desire to teach, either by forming classes for the purpose in the schools themselves, or by establishing Training Schools, auxiliary to the High Schools.

It is believed that many of the Academies would employ competent instructors, and establish such a course of instruction, to be prescribed by the Board of Education, provided reasonable encouragement should be proffered by the Commonwealth.

The experiment might be tried in two or three leading Academies; and, if found to work satisfactorily, it could then be gradually extended.

This system is in operation in New York, and between one and two thousand are annually instructed, free of charge, for four months, in the teachers' classes in Academies selected for that purpose by the Regents. "The results of the instruction given have been apparent in the improved character of the teachers of the Common Schools."

In 1870, this Board submitted to the legislature "An Act relating to free instruction in drawing," which was approved in May of that year. By this Act, drawing was made one of the branches of learning to be taught in the Public Schools; and every city and town having over 10,000 inhabitants was required to provide free instruction in drawing, to persons over fifteen years of age, either in day or evening schools. It is now admitted, by all who have examined the subject, that every one who can learn to write can learn to draw, and that drawing is simpler in its elements and can be more easily acquired than writing. Special instructors are no more required for drawing than for writing or arithmetic. Teachers must learn and teach elementary drawing as they learn and teach other branches. It has been found abroad that teachers can acquire a sufficient knowledge of drawing without any great sacrifice of time or patience.

In order to obtain the advantages of the best methods of instruc-

tion, Mr. Walter Smith, the art master in charge of the school at Leeds, England, has been employed by the Board as a professional adviser and lecturer in the matter of art education, and by the city of Boston as head master in the Normal Art School, his time being divided between the State and City in just proportion. He commenced his duties in July last, and has already delivered lectures in several of our large cities, and given practical demonstrations and addresses on the subject at the Teachers' Institutes. A collection of models, casts, apparatus and examples, similar to those used in the English Schools of Art, has been procured, and will be on exhibition in the schools when desired.

The Board are aware that the present provision is very inadequate, and hope soon to procure the services of a suitable person or persons, with assistants, to visit the different cities and towns and give such aid and advice as may be necessary for the successful introduction of this art into all our schools.

A very valuable tract, containing several papers on drawing, was printed by the Board in December last, and a circular sent in November to the School Committees of the towns throughout the State, calling attention to the law, and stating what provision had been made for giving lectures and furnishing the use of the models. Instruction in drawing has been given in many schools with very encouraging results, and especially in the Evening Schools in architecture, machine and ornamental drawing.

THE SCHOOL FUND.

The School Fund charged at cost amounts to \$2,233,350; its present market value exceeds the cost by nearly \$500,000. The aggregate income for the last five years was \$842,803.74,—the yearly average being \$168,560.75. The income for 1871 was \$177,496.46, one-half of which, or \$88,748.23, is disbursed "for the support of Public Schools without a specific appropriation." Of this sum \$100 is paid to each city and town, and the balance apportioned among the several cities and towns in proportion to the number of children in each between the ages of five and fifteen. This sum of \$100 to each town takes \$34,000, leaving \$54,748.23 to be apportioned among 278,249 children, or 19 cents to each child. The whole sum, if thus divided, would give to each child 32 cents. The sum raised for educational purposes by taxation averages \$11.78 per child, and the

mere statement of the case is sufficient to show how inadequate this 19 or 32 cents is to afford any substantial relief to the towns, or benefit to the schools.

The remaining half of the income is appropriated to other educational purposes, and the surplus of income, if any, is added to the principal fund. The aggregate amount of these expenditures for the last five years was \$381,401. The appropriations have increased year by year, and last year amounted to \$92,056,* and will not be much less than that in the future, unless the State changes its policy, and shows a less liberal spirit towards its educational interests.

We start, then, with the fact, that the income of the fund applicable to educational purposes is absorbed by the present wants of the school system, to which must be added interest and insurance on the new Normal School at Worcester, . \$3,700 00
Annual expenses of the school, 12,000 00

\$15,700 00

What arrangement shall be made for meeting the annual deficiency? Every town is now required by law to keep schools of a prescribed character for a fixed period every year, and to raise by taxation the amount required for their support. This tax is really assessed for the benefit of the entire Commonwealth, and not especially for the individual town, and properly it should be equally assessed upon all the property; but there is great inequality in the assessment, owing to the unequal distribution of property in the various towns and sections of the State. In the year 1869 and 1870, the percentage of taxation varied from .088 to .714 of one per cent., or in different counties from .231 to .421 of one per cent.,—the average was .321 of one per cent. The lowest percentage is generally in the large and wealthy cities,—the highest, in the small and poor farming towns. These towns feel the burden much more, and are tempted to keep down the school expenses, and raise the smallest sum possible, by paying their teachers small salaries, and providing poor and ill-furnished school-houses. Poor schools are the inevitable result of this system.

* These appropriations were not wholly expended, or there would have been a deficit.

The School Fund was originally established in 1834, in part to correct this evil, and it was then provided that a just and equal distribution of the fund should be made to Boston, and the several towns and districts throughout the Commonwealth. Since that time, the length of time the schools are required to be maintained has been greatly extended, and their character improved. Within the last ten years, the amount raised by taxation has been nearly doubled, having increased from \$6.42 per child in 1860, to \$11.78 in 1870–71. The income of the fund, therefore, which was then distributed, bore a much larger ratio to the whole tax than at present.

The Board believes that the principle suggested is a just one, and that some appreciable portion of the burden of taxation for schools should be assessed equally upon the whole property of the Commonwealth. It is therefore recommended that a State tax of one-half of one mill be levied with the general State tax, and the proceeds be held by the treasurer for Commissioners of the School Fund, and the net proceeds of said tax, together with the income of the School Fund, be expended, three-fourths for the support of Public Schools, without a specific appropriation, as the moiety is now expended, and the remaining one-fourth for other educational purposes. This tax will yield about \$500,000 on the valuation of 1865, and about \$700,000 on a new valuation, and will give about \$650,000 a year to be distributed among the towns, and \$217,000 a year for other educational purposes.

A special report will be submitted in response to a Resolve of the last General Court, to provide “for the revision of the laws relating to attendance upon the Public Schools.”

TECHNICAL EDUCATION.

A Resolve was passed by the last General Court “relating to Technical Instruction in Schools,” by which the Board of Education were directed to report “a feasible plan for giving in the Common Schools of the cities and larger towns of this Commonwealth additional instruction, especially adapted to young persons who are acquiring practical skill in mechanic or technical arts, or are preparing for such pursuits.”

Technical education is instruction in the peculiar knowledge or special skill required in any business or occupation — the training

which will render the talents of the citizen most useful to the State in that particular craft, trade or profession in which he or she is engaged, whether as mechanic, farmer, sailor, engineer, teacher, merchant, architect, minister, doctor or lawyer. As the education of the Common Schools fits the youth for the performance of his general duties as a citizen, so the Technical School prepares him for the special duties of his trade or profession. Divinity, Law and Medical Schools, for special or technical instruction in those professions, have long been in successful operation. More recently, the State has established Normal Schools for training teachers, and an Agricultural College to educate farmers. It has also generously endowed the Institute of Technology in Boston, and the Museum of Zoölogy in Cambridge; but though these last two institutions, and the Scientific School in the latter place, afford great advantages to those who intend following the higher walks of industrial pursuits, they do not give the practical instruction required to fit the mechanic for his daily work. They bear the same relation to schools for the technical education of mechanics that the college does to the High School: each is indispensable in its place, but neither fulfils the functions of the other.

The only school in this State where a technical education in mechanics combined with practice can be obtained, is the "Worcester County Free Institute of Industrial Science" in Worcester. It was incorporated in 1865, and is a model institution, which has no superior in this country. The corps of instructors embraces professors of chemistry, mechanics and physics, drawing, mathematics, civil engineering, French and German. There are eighty-nine pupils in the school, mostly from Worcester County. There are also twenty free State scholarships for the benefit of pupils from other counties than Worcester, to be selected by the Board of Education.

The value and importance of schools of this character is not understood or appreciated in this country. If our citizens engaged in mechanical pursuits, and they comprise the body of the people, had realized that the State could have provided schools as useful and necessary for the education of mechanics as the Divinity and Law Schools are for the training of ministers and lawyers, they would have demanded and obtained them before this. It should be unnecessary to enlarge upon the vital impor-

tance of schools of this character. One of our leading citizens who has devoted much time and thought to this subject says that "provision for the prompt, speedy and ample or the better education for the manufacturing or mechanic operatives of Massachusetts is not only an investment promising a vast pecuniary return, but is to-day a *necessity of self-preservation for the State.*" Four-fifths of all the industry of the State is dependent upon occupations for which the training of these schools would be a preparation; over 250,000 of our inhabitants are engaged in mechanical pursuits, yet nothing has been done for their special instruction until within a few years.

In this branch of education, as in many others, Germany, Switzerland, Austria and Belgium have taken the lead, leaving England and America far behind. In the great exhibition in London, in 1851, English workmen excelled in nine-tenths of the one hundred departments; but in the Paris Exposition of 1867, they excelled in only one-tenth. During those sixteen years artists, mechanics, engineers and chemists trained in Technical Schools, had entered the workshops of Europe, and by means of their skill and knowledge had transferred to the Continent the supremacy England had so long enjoyed. At that very time, a French company was building locomotives for an English railway, and iron girders for a building in Glasgow were being constructed in Belgium. England, alarmed at the report of her jurors at the Exposition, at once established Technical Schools in many of her largest cities and has determined that hereafter her citizens shall at least be as well educated as those of Europe, and shall have a technical training "which will make the new generation of Englishmen excel the new generation of foreigners in this coming rivalry of race and nation."

The question for Massachusetts to consider is, what position she will take in this strife for the world's prizes. We cannot expect long to enjoy the high protective tariffs that now keep out the cheap products of the skilled labor of Switzerland and Prussia, nor should we desire it. The market for our industries ought not to be confined to the State nor even to the United States. The broader development which our free institutions give to the individual man, enables him to accomplish a greater amount of work; and if we only furnish a better technical education than is given abroad, we can contend on an equal footing and compete

successfully for the markets of the world. Without such education, the American artisan must gradually descend in the scale of industry and content himself with a menial station in life, for there is no middle ground. Drawing is the language of mechanics, and ability to use the pencil freely lies at the foundation of success in many mechanical pursuits. The Board have not overlooked its importance, and two years since they submitted to the legislature a bill "relating to free instruction in drawing," which became a law. The good results that have already followed are admitted by the community and have been referred to in another portion of this Report.

While the Board do not think it feasible or advisable to give technical instruction in the Common Schools, other than drawing, and perhaps needle-work to girls, inasmuch as none of the branches now taught in those schools can be dispensed with, for the graduates of the Common Schools are the only ones properly fitted to enter the Technical School, they would suggest that the State authorize all cities and towns having a population of five thousand and over to establish free technical schools for instruction in such branches of knowledge common to the leading industries of the entire State as may from time to time be prescribed by the Board of Education.

WILLIAM CLAFLIN.

JOSEPH TUCKER.

CONSTANTINE C. ESTY.

SAMUEL T. SEELYE.

JOHN D. PHILBRICK.

DAVID H. MASON.

HENRY CHAPIN.

ALONZO A. MINER.

GARDINER G. HUBBARD.

WILLIAM RICE.

REPORTS OF VISITORS OF THE NORMAL SCHOOLS.

FRAMINGHAM.

The school gives evidence of permanent prosperity and increasing usefulness.

The statistics for the year are as follows :—

Graduates for winter term, 1870–71,	.	.	.	.	.	8
for summer term, 1871,	.	.	.	.	.	19
Pupils who left without graduating,	.	.	.	.	.	21
who have died,	.	.	.	.	.	1
Advanced class, winter term, 1871–72,	.	.	.	.	.	7
Senior “ “ 1871–72,	.	.	.	.	.	20
Second “ “ 1871–72,	.	.	.	.	.	28
Third “ “ 1871–72,	.	.	.	.	.	22
Fourth “ “ 1871–72,	.	.	.	.	.	28
Total,	.	.	.	.	.	154
Number admitted, February, 1871,	.	.	.	.	.	20
September, 1871,	.	.	.	.	.	26
Average age of those admitted in February,	.	.	.	.	.	17.7 yrs.
admitted in September,	.	.	.	.	.	17.8 yrs.

Six States are represented :—New Hampshire, 8 ; Vermont, 2 ; Massachusetts, 135 ; New York, 6 ; Rhode Island, 2 ; New Jersey, 1.

Six counties of Massachusetts are represented :—Worcester, 63 ; Middlesex, 42 ; Norfolk, 11 ; Suffolk, 5 ; Bristol, 2 ; Franklin, 1.

The towns represented are :—Framingham, 14 ; Milford, Natick, Southborough and Westborough, 7 each ; Northborough, 5 ; Boston and Acton, 4 each ; Brookfield, Grafton, Needham, Newton, Winchendon and Worcester, 3 each ; Blackstone, Concord, Fitchburg, Franklin, Holliston, Lancaster, Marlborough, Medfield, Mendon, Millbury, Stoneham and Wayland, 2 each ; Auburn, Barre,

Berlin, Charlestown, Chelsea, Dana, Douglas, Holden, Leominster, Medway, Milton, New Bedford, New Braintree, Orange, Paxton, Pepperell, Sherborn, Somerville, Sterling, Sturbridge, Taunton, Templeton, Upton, Uxbridge, Webster, West Roxbury and Wrentham 1 each.

The occupations of the parents are:—Farmers, 5 ; carpenters, 10 ; manufacturers, 6 ; shoemakers, 9 ; clergymen, lawyers and mechanics, 4 each ; machinists, blacksmiths physicians and laborers, 3 each ; traders, 12 ; cabinet-makers, 8 ; overseers, sailors, miners, cashiers, painters, book-keepers and agents, 2 each ; coopers, tanners, gardeners, musicians, butchers, bakers, printers, artists, leather-workers, sea captains, teamsters, mill operators, millers, architects, naval officers, carriage-makers, sail-makers, copper-smiths and harness-makers, 1 each.

At the close of the winter terms, Miss Ellen A. Chandler and Miss Abby P. Kelly resigned their places as teachers, and Miss Sabrina Jennings and Miss Maria S. Eaton were appointed in their respective places. Miss Ellen Hyde, senior assistant, being unable, by reason of ill health, to take her full number of classes, resigned at the close of the summer term, and is now in Germany pursuing studies, as far as her health will allow. No appointment has been made in her place.

At the opening of the fall term, a new advance class was formed. For this class, as well as for others in the school who wished to study French, Madame J. M. Destre has been employed during the term.

A course of lectures on natural history and geology was given during the spring term by Professor Sanborn Tenney, of Williams College. Other lectures have been delivered during the year by Hon. Emory Washburn, Professor W. P. Atkinson and A. J. Phipps, Esq., Agent of the Board.

There is urgent necessity for new and ample apparatus for illustrating physiology, chemistry and natural philosophy. The present apparatus is old, poor and meagre, and can be used with little pleasure or profit.

A room in third story of the new part of the school building, designed for instruction in drawing, is unfinished. The wants of this department of study require that this room should be completed at once, as the present use of the hall for drawing exercises

is attended with inconvenience and interruptions to other exercises.

It is also very desirable that the library should be removed from its present room, which is needed for other purposes, to an upper room fitted for it, but which must first be furnished with shelves, tables, &c.

All the expectations in regard to the success and usefulness of the boarding-house have been fully met. During the present term it has been crowded, and there have been more applicants than could be accommodated. A much larger building would readily be filled, and the number of pupils in the school increased accordingly. The price of board has been \$3.50 per week.

On account of the inadequacy of the supply of water in the wells and cistern during much of the time, great discomfort has been occasioned, and large expense incurred by the State, in being compelled to have water brought from a distance. This expensive trouble will continue until some new mode of supply shall have been adopted.

The school grounds need to be graded, and furnished with shade-trees. They are now in a rough condition, and present an unsightly appearance, and one not creditable to a State School. We hope an early appropriation will be made for their improvement in the coming spring.

We regret the retirement from the Board of the Hon. Emory Washburn and D. H. Mason, who, for some ten years as Visitors of this school, gave to it their constant and pleasant supervision. To teachers and pupils they were not only welcome official Visitors, but personal friends. The important change made by the Board several years ago, by which the school was placed under the charge of a woman, the present accomplished and successful Principal, was from the first sanctioned by them, and to it they gave their enthusiastic support, and retained their connection with the school until the change had been fully tested, and its success assured.

HENRY CHAPIN,
C. C. ESTY,
Visitors.

JANUARY, 1872.

WESTFIELD.

The Visitors of the Westfield Normal School are happy to report that this School has been eminently prosperous during the past year. The number seeking its advantages, and the demand for its graduates, have been greater than ever before. We cannot speak too highly in commendation of the zeal and devotion and ability of the accomplished Principal, to whom the school is so largely indebted for its success.

There has been but a single change in the regular corps of teachers during the year. Mr. J. C. Greenough has been "called up higher," having received and accepted the appointment of Principal of the State Normal School of Rhode Island. Mr. Greenough has been connected with this school, as one of its teachers, for fifteen years. During that long period he was faithful in his work and commanded the respect of the pupils of the school and of the community in which he lived.

His departure was a loss to the school, but we trust it was a gain to the State in which he is now laboring with great earnestness. We cordially wish him great prosperity.

Miss Ella J. Mole, a recent graduate of the school, was appointed Assistant, August 6. While a member of the school she distinguished herself as a scholar, and since her appointment as teacher she has given evidence of possessing, to an eminent degree, the teaching power that insures success.

On the whole, the classes of the school were never more satisfactorily taught than now.

The advanced classes are pursuing the advanced course of study with great pleasure and profit. Three of the advanced pupils have entered upon a course of special training for "Training Schools." There is now a great demand for teachers of these schools. We shall soon be able to do something towards supplying this demand.

The chemical and philosophical apparatus, and the specimens in our cabinets, are so constantly used that both apparatus and

cabinets need replenishing. A sum of money should be appropriated to this purpose.

The Reference Library is also in need of new books.

The same reasons that led to an earnest appeal, last year, for a boarding-house for the Normal pupils, lead us to make a still more earnest appeal the present year. Such a house seems to be essential to the continued prosperity of the school. It is becoming more and more difficult to secure homes of any kind for the pupils. It is now impossible to provide *good* homes for them all. Hence a boarding-house is needed, not only to accommodate the pupils, but also to keep them under those strong and healthful influences which are thrown around them during the sessions of the school.

The Secretary of the Board has given several valuable lectures on civil polity to the senior class. The Agent, Mr. Phipps, has also given two instructive lectures.

Mr. Dickinson, in his report to the Visitors, says:—

“Our thanks are due to many friends for contributions to our cabinets. We are now greatly in need of these contributions, and we promise to those who will aid us a most hearty appreciation of their favors.

“Our pupils have been happy in their work, and are cheered in it by the prospect of future usefulness and success.

“Our teachers have no superiors in ability and faithfulness, and we commend both pupils and teachers to the State to which they have consecrated their services.”

The statistics of the school are as follows:—

The whole number in attendance during the past year is—

Ladies,	.	.	.	.	.	.	.	117
Gentlemen,	.	.	.	.	.	.	.	17
Total,	.	.	.	.	.	.	.	— 134

Of this number Hampden County furnished 48; Hampshire, 22; Franklin, 21; Worcester, 18; Berkshire, 12; Suffolk, 1; Essex, 1; Connecticut, 5; Rhode Island, 2; New Hampshire, 2; Vermont, 2; New York, 2; New Jersey, 1; Wisconsin, 1; Kansas, 1. Total, 134.

Graduates.—Fall and winter term, 1870–71,—

Ladies,	.	.	.	.	.	.	.	13	
Gentleman,	.	.	.	.	.	.	.	1	
Total,	.	.	.	.	.	.	.	—	14

Spring and summer term, 1871,—

Ladies,	.	.	.	.	.	.	.	23	
Gentleman,	.	.	.	.	.	.	.	1	
Total,	.	.	.	.	.	.	.	—	24

Whole number of graduates,—

Ladies,	.	.	.	.	.	.	.	36	
Gentlemen,	.	.	.	.	.	.	.	2	
Total,	.	.	.	.	.	.	.	—	38

Number in entering classes.—Fall and winter term, 1870–71,—

Ladies,	.	.	.	.	.	.	.	26	
Gentlemen,	.	.	.	.	.	.	.	3	
Total,	.	.	.	.	.	.	.	—	29

Spring and summer term, 1871,—

Ladies,	.	.	.	.	.	.	.	29	
Gentlemen,	.	.	.	.	.	.	.	3	
Total,	.	.	.	.	.	.	.	—	32

Whole number entered during the year,—

Ladies,	.	.	.	.	.	.	.	55	
Gentlemen,	.	.	.	.	.	.	.	6	
Total,	.	.	.	.	.	.	.	—	61

Average age of entering class,—

Ladies,	.	.	.	.	.	.	.	18 years 5 months.	
Gentlemen,	.	.	.	.	.	.	.	19 “ 2 “	
General average,	.	.	.	.	.	.	.	18 “ 6 “	

Occupation of parents: farmers, 26; manufacturers, 8; clergymen, 7; mechanics, 14; merchants, 3; miller, 1; printer, 1; painter, 1. Total, 61.

Number of those who receive State aid.—Fall and winter term, 1870–71,—

Ladies,	.	.	.	.	.	.	.	40	
Gentlemen,	.	.	.	.	.	.	.	4	
Total,	.	.	.	.	.	.	.	—	44

Spring and summer term, 1871,—

Ladies,	.	.	.	.	.	.	.	49	
Gentlemen,	.	.	.	.	.	.	.	5	
Total,	.	.	.	.	.	.	.	—	54

Whole number who have received State aid,—

Ladies,	.	.	.	.	.	.	.	89	
Gentlemen,	.	.	.	.	.	.	.	9	
Total,	.	.	.	.	.	.	.	—	98

Respectfully submitted,

S. T. SEELYE,
WM. RICE,
Visitors.

BRIDGEWATER.

The statistics of this school for the year 1871 are as follows:—

Number of pupils admitted during the year:—Gentlemen, 16 ; ladies, 60 ; total, 76.

Average age on admission:—Gentlemen, 20.6 years ; ladies, 19.75 years ; general average, 19.9 years.

Number who had previously taught:—Gentlemen, 6 ; ladies, 28 ; total, 34.

Number in attendance, spring term:—Gentlemen, 88 ; ladies, 96 ; total, 184. Fall term:—Gentlemen, 82 ; ladies, 107 ; total, 189.

Whole number in attendance during the year:—Gentlemen, 42 ; ladies, 137 ; total, 179.

Number of graduates for the year:—Gentlemen, 13 ; ladies, 24 ; total, 37.

Number who have received State aid:—Gentlemen, 19 ; ladies, 33 ; total, 52.

Number admitted since the beginning of the school,	.	1,915
graduated “ “ “	.	1,117

Of the 76 pupils admitted in 1871, Bridgewater, Fairhaven, West Bridgewater, sent 5 each ; Abington, Middleborough, North Bridgewater, 4 each ; Westminster, 3 ; Boston, East Bridgewater, Kingston, Petersham, Royalston, Swansea, 2 each ; Chelsea, Dighton, Hanover, Haverhill, Hingham, Marblehead, Medway, Blackstone, Natick, Newton, Northfield, Plymouth, Plympton, Provincetown, Rockport, Scituate, South Scituate, Stoughton, Tyngsborough, Westport, Weymouth, 1 each ; Jaffrey, N.H., 2 ; South Acton, Northampton, Pelham, Peterborough, Tuftonborough, 1 each ; Rockland, Me., 3 ; Brandon, Vt., 1 ; Lower Merion, Penn., 1.

The occupations of their fathers have been given as follows:—Farmers, 25 ; mechanics, 27 ; physicians, 5 ; clergymen, 3 ; sea captains, 2 ; seamen, 2 ; clerk, dentist, druggist, trader, miller, fur dealer, paper-maker, stone-mason, stable-keeper, tanner, 1 each ; unknown, 2.

Of the 179 pupils in attendance during the year, Plymouth County sent 56 ; Bristol, 23 ; Norfolk, 22 ; Middlesex, 17 ; Worcester, 15 ; Barnstable, 10 ; Suffolk, 7 ; Essex, 4 ; Franklin, 3 ; Dukes, 1. The State of New Hampshire sent 13 ; Maine, 3 ; Vermont, 2 ; Pennsylvania, 1 ; Texas, 1, and Nova Scotia, 1.

Six of the United States, ten counties, and sixty-seven towns of this State, have been represented by the pupils during the year.

The school has had interesting and valuable lectures during the year from Prof. Sanborn Tenney, of Williams College ; Rev. Wm. Barrows, D.D., of Reading ; Prof. W. P. Atkinson, of Boston ; G. G. Hubbard, Esq., of the Board of Visitors ; Hon. Joseph White, the Secretary, and Abner J. Phipps, Esq., the Agent, of the Board of Education.

The advanced course, for which provision was made by the Board two years ago, is in full operation. It has been so arranged that pupils who, on entering the school, have in view the completion of this higher course, may each term take a part of its studies in connection with a part of the branches in the regular course, and in this way, at the end of four years, be prepared to graduate from both courses simultaneously. This arrangement gives the students the benefit of the study of the languages in connection with the study of the other branches of the course. Graduates from the regular course may go on with the advanced course, devoting their time exclusively to it. There are now fourteen graduates and under-graduates together pursuing the studies of the advanced course.

This school has been fortunate in its teachers. During the last four or five years there have been very few changes in the corps of instructors, who have worked together in perfect harmony, with great fidelity and with constantly increasing ability. The combination of permanency and excellence on the part of the teaching staff has naturally resulted in a constant advance in the quality and quantity of the work done by the school. Mr. Kirmayer, who was appointed a little more than a year ago, proves to be a valuable acquisition to the school, bringing to his work a large share of patience, zeal, German fulness of learning and German thoroughness of method. At the close of the spring term, Mr. Winship resigned his position to engage in business, and Miss Richards resigned early in the fall term, to take charge of a home. They were highly valued by

us ; they merit our warmest thanks for their earnest devotion to the interests of the school, and they carry with them, into their new spheres of duty, our best wishes for their continued prosperity.

The vacancies thus occasioned were filled by the appointment of Mr. Barrett B. Russell, Principal of a large Grammar School in Dedham, and Miss Clara A. Armes, First Assistant in a Grammar School in Newton. They are members of the class graduated from this school in January, 1869. Both were able and successful teachers in the positions from which they were called, and have fully sustained that reputation in their present work.

The instructors at the present time are :—Albert G. Boyden, A.M., Principal ; George H. Martin, Francis H. Kirmayer, Barrett B. Russell, Eliza B. Woodward, Mary H. Leonard, Clara A. Armes, Mary A. Currier, all of whom are thoroughly devoted to their work, Principal and assistants coöperating cordially with each other in promoting the best interests of the institution.

The salaries of Messrs. Kirmayer and Russell are not so high as they should be, and probably another female teacher will be needed next term.

The most important event in the history of the school during the past year, was the enlargement and improvement of the school building. The Committee of the Board appointed to take charge of this business, employed Mr. Boyden as their agent, to superintend the work in all its departments. He has performed this service with fidelity and good judgment, and to the entire satisfaction of the committee. The report of Mr. Boyden, as superintendent of the work for the enlargement of the school-house is here inserted.

BRIDGEWATER, December 29th, 1871.

To the Committee of the Board of Education for the Enlargement of the Bridgewater Normal School Building, Messrs. JOHN D. PHILBRICK, JOSEPH WHITE A. A. MINER.

DEAR SIRS :—I herewith submit to you my report of the work entrusted to me in the superintendence of the enlargement of the Bridgewater Normal School Building.

The resolve of the Legislature authorizing the expenditure of a sum not exceeding \$15,000, to be paid out of the moiety of the income of the school fund applicable to educational purposes, for the enlargement and reconstruction of this building, was approved May 12, 1871.

The plans for the enlargement were carefully matured after visiting

and examining several other school buildings recently erected and much study of the building to be altered, Solomon K. Eaton, Esq., of Mattapoisett was employed as architect to make the working plans and elevations. After careful estimates of the cost of the work had been obtained from different parties the contract for carpenter and mason work and painting was given to Mr. Eaton, the architect. It was provided in the contract that the new cases for the cabinet therein specified should be built at cost and all extra work should be done at the same rate.

The building has been enlarged by adding a story sixteen feet in height, and greatly improved in external appearance by an observatory on the centre, a new roof with heavier projections and a new cornice and a band between the first and second stories with quoins upon the pilasters of the lower story.

The first story contains the ante-rooms for the students, four recitation rooms, a room for philosophical apparatus and a chemical laboratory. Upon the second floor are five commodious recitation rooms, with alcoves and cases for the library and cabinets. The third story contains the main school-room, a spacious hall, well ventilated, light and very cheerful, the senior recitation room and the Principal's room. It is now one of the most pleasant and convenient school buildings in the State.

The work on the building was commenced July 12, immediately on the close of the spring term, and was so far completed at the end of the summer vacation that the school could go on with its usual work. Mr. Eaton deserves much credit for the energy and fidelity with which he fulfilled his contract.

These changes in the building created the necessity for new heating and ventilating apparatus. The two McGregor furnaces which warmed the building before the enlargement have been in use for ten years, are nearly worn out, and will last only through the present winter. Estimates were obtained for heating and ventilating the building by steam after the plan which has proved so admirably effective in the boarding hall. The appropriation was found sufficient to procure only the ventiducts necessary for this plan. These were put into the construction of the building, and two portable furnaces were added to the heating apparatus for use during the present winter, which can be readily sold another year, leaving the steam-heating apparatus to be provided for by another appropriation.

The appropriation of \$15,000 has been expended as follows by the direction of the committee:—

S. K. Eaton, architect,	\$240 00
S. K. Eaton, contractor,	13,833 00
S. K. Eaton, for extra work,	320 81
J. G. Sparrow, for extra painting,	90 96
J. H. Fairbanks, for furnaces, pipes, and labor,	366 28
H. G. Goodrich, for making blackboard,	85 00
Peter C. Jones and Son, for sheathing paper,	24 15
A. G. Boyden, paid for stone work on foundations,	89 80
	<hr/>
	\$15,000 00

These bills have all been paid and the receipts returned to the treasurer of the Board, with the exception of those now accompanying this report.

The contractor has delivered the building free from all claims upon it, as per terms of the contract. All which is respectfully submitted.

A. G. BOYDEN, *Superintendent.*

In accordance with the facts presented in the foregoing report, the Visitors recommend that the legislature be requested to make the necessary appropriation for furnishing the school building with steam-heating apparatus.

A second year's experience in the boarding-hall has more than confirmed the estimate of its utility given in our last report, and more urgently presses upon us the necessity for its enlargement. It is no longer an experiment; its success is beyond question. It is now indispensable to the maintenance of the school, and a further increase in the number of students is not to be expected until additional boarding accommodations are provided.

There is now as much difficulty in obtaining the requisite boarding places outside the hall, as there was to get suitable boarding places before the hall was built. There is the additional difficulty arising from the difference between the price of board in the hall and in private families, the latter being \$1.25 per week more than the former. Those who are excluded from the hall are more or less dissatisfied. Already numbers of pupils have been prevented from entering the school on account of the high prices of board in private families, and the difficulty of obtaining suitable board at any price. And some pupils now in attendance will be compelled to leave unless some relief in respect to board is provided.

In view of these facts the Visitors would renew, with increased earnestness, the request made last year for an enlargement of the boarding-hall. If this improvement is made at the same time with the furnishing of the new heating apparatus for the school-house, a considerable saving might be made by combining the apparatus for both buildings.

The Visitors expect to be able to lay before the Board, at its next meeting, estimates of the expense of enlarging the boarding-hall, and heating the school building.

We would again remind the Board of the desirableness of providing a new and suitable fence for the school grounds.

In conclusion, the Visitors take great pleasure in reporting the school, with exception of the needs above referred to, in a highly satisfactory condition, and as a simple act of justice we desire to say with emphasis, that the prosperity of the school is due in a large measure to the untiring labors and the judicious management of the capable and worthy Principal.

JOHN D. PHILBRICK,
GARDINER G. HUBBARD,
Visitors.

S A L E M .

The Salem Normal School has enjoyed a year of great prosperity. Its excellent Principal, D. B. Hagar, Ph. D., compelled to relax his toil and withdraw from duty during a portion of the preceding year, has been at his post continually during the last year, as have also his efficient assistants, with the exception of Miss Mary E. Webb. In consequence of ill health, Miss Webb, for a long time one of the most successful teachers in the school, has been obliged to suspend her labors, and to seek a restoration to health in a foreign land. Her duties have, in part, been most acceptably performed by Miss E. Adelaide Towle, a member of the advanced class.

The statistics for the year 1871, were as follows:—

1. The whole number of pupils since the opening of the school, September 13, 1854, is 1,453.

The number in attendance during the first term of the year, 152; during the second term, 158; number of different pupils during the year, 213.

Number admitted February 14, 1871, 25; average age, 18.83 years. Number admitted August 29, 1871, 59; average age, 18.36 years.

2. Of the 84 pupils admitted during the year, Salem sent 11; Lowell, 8; Lynn and Peabody, 5 each; Chelsea and Swampscott, 4 each; Manchester, Somerville and Wakefield, 3 each; Haverhill, Lynnfield Centre, Malden, Newburyport and Andover, 2 each; Danvers, Danvers Centre, Dunstable, East Boston, East Saugus, Franklin, Gloucester, Ipswich, Lynnfield, Marblehead, Marshfield, Medford, Medway, Methuen, North Reading, Sterling and Topsfield, 1 each. The State of New Hampshire sent 6; New York, 2; Maine, Pennsylvania and Vermont, 1 each.

Of the 213 pupils present during the year, Essex County sent 125; Middlesex, 40; Suffolk, 9; Norfolk, 5; Worcester, 5; Plymouth, 3; Bristol, 2; Barnstable, 1; Nantucket, 1. The State of Maine, 3; New Hampshire, 13; Vermont, 1; New York, 2; New Jersey, 1; Pennsylvania, 1; Iowa, 1; Louisiana, 1.

3. The fathers of the pupils admitted during the year, are, by occupation, as follows: Farmers, 14; carpenters, 12; overseers, painters and shoe manufacturers, 3 each; blacksmiths, brokers,

clergymen, engineers, lawyers, livery-stable keepers, lumber dealers, mariners, merchant tailors and tanners, 2 each; butcher, cabinet-maker, cashier in bank, clerk, colonel, commission-merchant, cooper, fresco-painter, furniture-dealer, gardener, grocer, insurance agent, leather-dealer, maker of patterns for iron-work, merchant, proprietor of boarding-house, provision dealer, real estate agent, register of deeds, restaurant keeper, rubber manufacturer, ship carpenter, shoe-cutter, shoe-dealer, shoe-stitcher, stereoscope-manufacturer, stock-fitter, superintendent in cotton mills, and treasurer of a lead company, 1 each.

4. Of the class admitted in February, 5 had taught school; of the class admitted in August, 13 had taught; total, 18.

5. Number graduated January 17, 19; number graduated June 30, 40.

Whole number of graduates of the school (32 classes), 659.

6. Number of pupils present in the several classes during the first term of the year:—Advanced class, 4; class A (senior), 41; class B, 29; class C, 49; class D, 29.

Number present during the second term:—Advanced class, 12; class A, 19; class B, 47; class C, 21; class D, 59.

7. Thirty-one pupils have received State aid during the year, and thirty-seven have received aid from the income of the Bowditch Fund.

8. During the year, 525 volumes have been added to the general and text-book library,—425 by purchase, and 100 by gift.

9. The class that graduated in June very liberally contributed one hundred dollars to the fund for procuring a telescope for the school.

During the first half of the past year, the sessions of the school were held in the High School building, belonging to the city of Salem, where they were but indifferently accommodated; during the last half, in the remodelled building belonging to the Normal School. The enlargement of the Normal building, which was begun in July, 1870, was so far advanced in June, 1871, as to allow the school to reoccupy the house on the occasion of the public examination at the close of the summer term. In addition to the customary exercises, there were held at that time services appropriate to the rededication of the edifice to its important objects. There were present on the occasion, participating in the exercises, several members of the Board of Education, among whom were,

Hon. J. D. Philbrick, Hon. D. H. Mason, and Hon. A. J. Phipps, Agent of the Board, and distinguished citizens of Salem, among whom we mention Dr. George B. Loring and Professor Alpheus Crosby, former Principal of the school.

The building has been nearly doubled in capacity, and greatly improved in appearance and convenience. It now contains a spacious and beautiful assembly hall; numerous large, well-ventilated and cheerful recitation rooms; a fine library and reading-room; a philosophical room; a chemical room; and various other rooms, all of which are well adapted to meet the wants of the school, and to advance its prosperity.

Owing to the exhaustion of the appropriation made for the enlargement, three rooms in the third story have been left unfinished. As these rooms are needed for use (two of them being already occupied), and as the cost of finishing them will be only a few hundred dollars, it is hoped that an appropriation sufficient for the completion of the work will soon be made.

The Visitors of this school would most heartily congratulate the Commonwealth on having thus secured an admirable building, of fine appearance, symmetrical and convenient — scarcely less so than it would have been if constructed entirely anew from its foundations, and all at a very moderate cost. It must not be forgotten that very much of this success is to be attributed to the thorough study of the plan of the building, and constant watchfulness over its execution, by the vigilant Principal.

A. A. MINER,
Visitor.

TREASURER'S REPORT.

APPROPRIATIONS FOR NORMAL SCHOOLS.

1870-71.	1871.	Appropriation, From unexpended balance, Todd Fund, .	\$45,000 00 331 36
FRAMINGHAM SCHOOL.			
Annie E. Johnson, Principal, salary, .	\$2,500 00		
Assistants' salaries, .	5,332 78		
Books and binding, .	863 73		
Printing, .	124 41		
Apparatus, .	60 95		
Lectures, .	100 00		
Advertisements, .	30 87		
Fuel, .	678 05		
Janitor, .	250 00		
Sandries, .	6 00		
	\$10,238 80		
WESTFIELD SCHOOL.			
John W. Dickinson, Principal, salary, .	\$2,000 00		
Assistants' salaries, .	7,500 00		
	500 00		
Sec., .	523 27		
	54 31		
	33 90		
	311 00		
Fuel, .	404 54		
Printing, .	62 45		
Insurance, .	60 00		
Teacher of elocution and lectures, .	80 00		
Repairs and cabinet expenses, .	13 82		
	\$12,548 50		
BRIDGEWATER NORMAL SCHOOL.			
Albert G. Boyden, Principal, salaries, .	\$2,000 00		
Assistants' salaries, .	7,415 78		
Lectures, .	92 00		
Repairs, .	928 23		
Janitor, .	116 00		
Printing and advertising, .	116 12		
Books, apparatus and chemicals, .	260 85		
Furniture, .	359 11		

Fuel,	\$408 45			
Insurance,	100 00		\$12,091 54	
SALEM NORMAL SCHOOL.				
D. B. Hagar, Principal, salary,	\$3,000 00			
Assistants' salaries,	6,700 00			
Janitor,	183 00			
Carpenter work and labor,	27 29			
Removing furniture and ashes, &c.,	64 50			
Fuel,	672 50			
Repairs on furnaces, desks, &c.,	140 70			
Carpeting,	106 11		10,894 43	
			\$45,831 36	\$45,831 36

APPROPRIATION FOR STATE AID.

1871. July,	Treasurer's check— To A. G. Boyden, Bridgewater School, A. E. Johnson, Framingham School, J. W. Dickinson, Westfield School, D. B. Hagar, Salem School,	\$500 00 500 00 500 00 500 00	1871.	Appropriation,	\$4,000 00
1872. Jan.,	Paid A. G. Boyden, Bridgewater School, A. E. Johnson, Framingham School, J. W. Dickinson, Westfield School, D. B. Hagar, Salem School,	\$500 00 500 00 500 00 500 00			\$4,000 00

SALEM NORMAL SCHOOL BUILDING ENLARGEMENT.

1870.		1870.	1870.	Received from Treasurer.	\$15,000 00
Sept. 30,	Paid Fuller & Walker, carpenters,	\$1,500 00	Sept. 30,	.	.
Nov. 2,	Simeon Flint, mason,	2,000 00	1871.	.	.
4,	"	2,200 00	Jan. 5,	Received from Treasurer,	10,000 00
Dec. 13,	Fuller & Walker,	2,500 00	Oct. 19,	from Treasurer, Appropriation	500 00
30,	Lord & Fuller, architects,	500 00	1871.	.	.
	Daniel Henderson, painting, &c.,	400 00	Balance,	.	78 96
1871.					
Jan. 2,	Paid Fuller & Walker,	5,000 00			
Mar. 23,	Simeon Flint,	2,736 77			
Apr. 10,	.	2,172 00			
15,	.	300 00			
May 10,	Lord & Fuller,	100 00			
Aug. 2,	coing,	200 00			
	Daniel Henderson,	823 75			
	Fuller & Walker,	3,386 64			
	Simeon Flint,	1,665 80			
		\$25,573 96			

BRIDGEWATER NORMAL SCHOOL BUILDING ENLARGEMENT.

1871.		1871.	Appropriation,	\$15,000 00
July 5,	Paid S. K. Eaton, Architect,	\$240 00	.	.
29,	S. K. Eaton, Architect and builder,	4,611 00	.	.
Aug. 31,	S. K. Eaton, Architect and builder,	4,611 00	.	.
Sept. 23,	S. K. Eaton, by A. G. B., Architect and builder,	3,000 00	.	.
Nov. 27,	S. K. Eaton, Architect and builder,	1,000 00	.	.
Dec. 22,	Sundry bills,	1,538 00	.	.
		\$15,000 00		

ADDITION TO FRAMINGHAM NORMAL SCHOOL BUILDING.

1870.		1870.	Appropriation,	\$6,250 00
Mar. 18,	Paid to D. H. Mason,	\$1,200 00		
30,	to A. R. Eaty, by Auditor of Accounts,	1,074 64		
May 26,	to J. J. Walworth, by Auditor of Accounts,	1,500 00		
1871.				
Mar. 9,	Paid to J. J. Walworth, by Auditor of Accounts,	1,500 00		
Apr. 20,	to A. R. Eaty, by Auditor of Accounts,	975 36		
		\$6,250 00		\$6,250 00

BOARDING-HOUSE AT FRAMINGHAM NORMAL SCHOOL.

1870.		1870.	Received Loan from School Fund,	\$6,500 00
Feb. 25,	Paid A. R. Eaty, for J. J. Walworth & Co.,	\$2,000 00	Appropriation for Land,	1,200 00
Mar. 18,	D. H. Mason, for sundry bills,	1,807 03		
26,	D. H. Mason, for sundry bills,	1,200 00		
Apr. 26,	A. R. Eaty, for sundry bills,	1,770 00		
May 26,	A. R. Eaty, for Cutler & Co.,	210 00	Received appropriation for overpayment,	507 73
Oct. 13,	D. H. Mason, for Bailey,	98 87	Balance,	21 96
	J. J. Shaw,	113 70		
		\$8,239 69		\$8,239 69

FRAMINGHAM NORMAL SCHOOL BUILDING AND BOARDING-HOUSE (ADDITIONAL).

1871.		1871.	Appropriation,	\$6,066 71
Apr. 7,	Paid J. J. Walworth & Co. (Auditor's warrant),	\$2,000 00		
June 8,	J. J. Walworth & Co. (Auditor's warrant),	768 92		
Ja. to Oct.,	A. R. Eaty, Architect (Auditor's warrant),	1,000 00		
Oct. 20,	Sundry bills (Auditor's warrant),	3,246 27		
	State Treasurer,	23 53		
		\$7,038 02		\$7,038 02

INSURANCE ON BOARDING-HOUSES AT BRIDGEWATER AND FRAMINGHAM.

1869. Nov. 20, 1870. Feb. 24,	Paid for insurance on Bridgewater Boarding-house, . . . Paid for insurance on Framingham Boarding-house, . . .	1871. Apr. 28,		Received from appropriation (Auditor's warrant),	\$704 00
		\$315 00	389 00		
		\$704 00			\$704 00

J. WHITE, *Treasurer.*

I find the foregoing account to be correct.

CHAS. ENDICOTT, *Auditor.*

FIFTH ANNUAL REPORT

OF THE

CLARKE INSTITUTION FOR DEAF-MUTES.

CLARKE INSTITUTION FOR DEAF-MUTES.

AT NORTHAMPTON.

Members of the Corporation.

GARDINER G. HUBBARD, Boston, *President*.
 Hon. WILLIAM CLAFLIN, Newton, *Vice-President*.
 JAMES B. CONGDON, New Bedford, *Vice-President*.
 WILLIAM ALLEN, Northampton, *Clerk*.
 OSMYN BAKER, Northampton.
 LEWIS J. DUDLEY, Northampton.
 THOMAS TALBOT, Billerica.
 JULIUS H. SEELYE, Amherst.
 GEORGE WALKER, Springfield.
 HORATIO G. KNIGHT, Easthampton.
 F. B. SANBORN, Springfield.
 J. HUNTINGTON LYMAN, Northampton.

Treasurer.

LAFAYETTE MALTBY, Northampton.

Committees of the Corporation.

SCHOOL COMMITTEE.

LEWIS J. DUDLEY, <i>Chairman</i> .	JULIUS H. SEELYE.
GARDINER G. HUBBARD.	F. B. SANBORN.
WILLIAM ALLEN.	THOMAS TALBOT.

FINANCE COMMITTEE.

H. G. KNIGHT, <i>Chairman</i> .	WILLIAM ALLEN.
GEORGE WALKER.	

BUILDING COMMITTEE.

J. HUNTINGTON LYMAN, *Chairman*.

Teachers.

Miss HARRIET B. ROGERS,	Principal.
Miss HARRIET A. JONES,	Assistant.
Miss CAROLINE A. YALE,	"
Miss ABBY A. LOCKE,	"
Miss MARY E. POTWIN,	"
Mrs. H. J. BARDWELL,	"

Steward.

HENRY J. BARDWELL.

Patron.

Miss M. MCINTOSH.

Assistant-Patron.

Miss EMMA KELLOGG.

Attendants.

Miss LIZZIE ELDER.

Miss EMMA J. VOSE.

Farmer.

REUBEN ROBINSON.

REPORT OF THE PRESIDENT.

To the Board of Education.

GENTLEMEN:—In order to make the Fifth Annual Report of the Clarke Institution cover its school year, which begins in September, and correspond in time with the official reports of other institutions, it will include the year ended September 30, 1871, and its financial statements will stop with that date. Notice will be taken, however, of the pupils present at the opening of the school year which began September 20, 1872. Our Report, therefore, will contain remarks upon a portion of the year covered by the fourth report.

The whole endowment of this school is derived from the gifts and bequests of John Clarke, Esq., which amounted, during his life-time, to \$50,000, and since his death to \$223,250, making an aggregate of \$273,250. It was the strong and often expressed desire of Mr. Clarke that the Corporation should build a permanent establishment for the reception of pupils in Northampton, and, in accordance with this desire, the present estate on Round Hill was purchased and improved. The total cost of land and buildings here, up to the 1st of October, 1871, has been \$91,749.75; of furnishing, \$7,076 11; in all, \$98,825.86. The bequests of Mr. Clarke being held, according to the terms of the will, as a permanent fund, of which the income only is to be appropriated to the expenses of the establishment, it has been necessary to incur a temporary debt in paying for the buildings. This debt is now \$34,500. The fund, amounting now to \$223,250, is securely invested, and returns an average interest greater than that paid on the temporary debt. The real estate is in good repair, and estimated to be worth all it has cost. The number of acres is twelve, much of it under high cultivation, and planted with fruit-trees in good bearing. There are three halls, or school buildings, a stable, laundry, and gardener's cottage on the premises, all ample for their

present use, well built, and conveniently located. They were first occupied by our pupils in September, 1870, but the boys' house was not occupied till March, 1871, and the improvements in the grounds about it were not completed till the past summer. The school year of which we have to speak will therefore be the first year the new premises have been occupied.

The first term began September 28th, 1870, and closed February 14th, 1871; the second term began March 1st, and closed July 18th, 1871. The whole number of pupils during the year was 42; the average number was 40; the ordinary school expenses were \$12,561.79, for the two terms. A detailed account of the receipts and expenses will be found in another place. The number of pupils present at the opening of the second school year in the new buildings is 44; the number of teachers is five; of other employés, eleven. The Principal, Miss Rogers, is now in Europe, acquiring a knowledge of schools and methods of instruction there; having left Northampton early in July, expecting to return during the second term of the present school year.

Miss Rogers reached Europe in the latter part of July, went directly to Germany, and, before visiting any schools, devoted some weeks to study and practice in the German language. On the first of October, in company with the president of the Clarke Institution, she went to Vienna, and entered the school of Mr. Lehfeldt (in our last report misprinted Siegbach), which I had visited in 1870, and in which I was greatly interested. It is a small family school, and therefore Mr. Lehfeldt is able to give his pupils more individual instruction than is common in larger institutions. Here Miss Rogers observes the method of instruction pursued day by day, especially with the youngest pupils. She also visits, on alternate days, the great school of Mr. Deutsch, supported by the Jews of Vienna,—one of the largest and best articulating schools in Europe, and in the same quarter of the city with Mr. Lehfeldt's. Thus she has the opportunity of observing how the younger pupils are instructed in large classes, as well as in the smaller ones of Mr. Lehfeldt's school. She makes daily notes of the progress of the pupils in both schools, and writes these out fully for the use of her assistant teachers in Northampton, who compare the results thus recorded with those obtained in our own school,—an excellent method of comparing the practical value of the systems of instruction adopted in different schools. Miss Rogers will

remain at Vienna a considerable portion of the winter, and then visit other European Schools where either articulation or the sign language, or both, are employed, and record the results there witnessed. From her observations and my own, made in the present and past year, it is found that a direct comparison between our own school and those in Germany taught by articulation is difficult, on account of the difference in the methods and character of the teachers in the two countries, and the habits of thought and study among the people. Our American teachers are generally younger, and more active and versatile in their modes of thought and instruction; while the German teachers are slower, more plodding and methodical, following fixed rules rather than adapting themselves to the capacity of different scholars and classes. Indeed, the chief differences between the various European schools of articulation appear due to the teachers rather than the nominal methods pursued. Where the instructors are young, zealous, and interested in their work, the schools are good, by whatever system they are taught; wherever, from any cause, the enthusiasm is less, the instruction is apt to be more mechanical, and of comparatively little value. In our next report we hope to present a more detailed comparison of our methods with those of Europe.

During the school year ending with the long vacation last July, the greatest number of pupils present at the Clarke Institution was 42, the average number 40, and the number of classes five. There were also five teachers, including the principal, and not reckoning the additional teacher, who, since Miss Rogers has been absent, performs the duties of fifth instructor. Concerning the progress made, information will be found in the report of the school committee, hereto annexed. It has not been thought advisable to give samples of the compositions of the pupils in this Report, since those presented in the fourth report were written during the same school year of which we now speak. In regard to the employment of a special teacher of articulation, which the Corporation have long contemplated, a few remarks may be here made. Since our last report was written, an opportunity has been allowed to test, in some degree, a new system of teaching articulation, introduced in this country by Prof. A. M. Bell, of Canada, formerly of England, and practically communicated to teachers and pupils by his son, Mr. A. G. Bell. This system,

based upon a thorough study of the vocal organs and of the elements of speech, has been practised with admirable results in the Boston School for Deaf Mutes, and has been partially acquired by several of our teachers who have taken lessons of Mr. Bell. It will be more perfectly taught to them by Mr. Bell, in March, 1872, and we shall then, if it is found to be successful, assign the use of it to a special teacher of articulation in the Clarke Institution. Mr. Philbrick, the superintendent of Public Schools in Boston, and others who have observed the new system as practised by Mr. Bell's pupils, are warm in its praise, and trial of it is to be made, we understand, in the American Asylum at Hartford.

The attention of the Corporation has been called, at various times, to the importance of some preliminary examination and classification of the deaf-mute children of Massachusetts, who apply for admission to the three deaf-mute schools now open to them,—namely, the Clarke Institution, the Boston Deaf Mute School, and the American Asylum at Hartford. In each of these schools a different method of instruction is pursued, and each of these methods is better adapted to the needs of certain classes of children than the other. Those who can be taught articulation with advantage, and who, belonging in Boston or its vicinity, can live at home and enjoy the benefits of parental care, should enter the Boston School; those who are unable, or whose parents are unwilling to take this course, should be received at the Clarke Institution, if they are suitable subjects for our instruction; while those (of whom there are many, no doubt,) who are not likely to profit by instruction in articulation, or who cannot be received at Boston or Northampton for want of room, should go to Hartford. The choice of a school is left by law with the Board of Education; and it seemed proper to the Corporation to propose to this Board, and to the authorities of the Hartford Asylum a joint committee to examine applicants and assign them to the several schools according to their fitness and the wish of their parents. This proposition has not yet been accepted by all the parties consulted, but we are still of opinion that joint action on the part of the three schools would be best.

Our hope that the United States census of 1870 would give a more complete enumeration of the deaf-mute inhabitants of Massachusetts, and of the country, than had formerly been made,

seems likely to be disappointed. The preliminary census tables as first published, allowed but 538 deaf mutes in Massachusetts; and though these have since been revised so as to increase the number, we have reason to believe that this is still too small by three or four hundred. A member of our Corporation, during the year in which the Clarke Institution was chartered (1867), made a special census of deaf mutes in about three-fourths of the State, and obtained the names of about 800, which, with some additions, were deposited with the Board of Education in 1868. From this list it was estimated that the number in the whole State could not then be less than 1,000, when the population of Massachusetts was not more than 1,350,000. In 1870, the population had risen to 1,457,351, and the number of deaf mutes must have been at least 1,050. On the list above mentioned, 752 were entered with particulars of age and sex, and, in many instances, the occasion of deafness, and the time of its commencement were returned. It may be doubted whether a perfect enumeration of deaf mutes, particularly of children under ten years, was ever made in any country; if such a census should be taken in the United States, we believe it would show the whole number of all ages to be more than 25,000. The whole number of children and youth of this class under instruction in the 88 schools, large and small, reported in the United States in 1871, was about 4,000, of whom about 200 were from Massachusetts, or one-twentieth of the whole number. During the year a new day school, with about a dozen pupils, taught by articulation, has been opened at Cleveland (O.), and a small family school, taught by the same method, at Ledyard (Ct.), where one of the teachers is that veteran instructor of a few deaf-mute pupils, Jonathan Whipple. The day schools at Boston, Pittsburg, and Chicago have been continued, and attended with gratifying success.

In the absence of Miss Rogers, our own school is going on vigorously and successfully in its first term of the school year 1871-2; the teachers have labored diligently, and the classes were never in better training than at present. Our list of pupils, on a subsequent page, is that of the present school year, which began Sept. 20th, 1871, and will close with the long vacation, July 23d, 1872. Of the 44 on the list, two are day-pupils, and 38 are aided by the State of Massachusetts. Several of our more advanced pupils in former years are no longer with us, and one of them, Roscoe

Greene, of Providence (R.I.), who entered the school of Miss Rogers, at Chelmsford, in 1866, and continued here until the summer of 1870, has died during the past summer,—the first of all our pupils whose death we have learned. He was a young man of much intelligence and promise, and had acquired a very ready use of articulation, and a good English education, by the method pursued at this institution. We record his death with much regret.

As usual our school has been visited by large numbers of persons interested in the instruction of deaf mutes, and we perceive no change in the friendly feeling with which it is regarded by the public and by individuals. Our thanks are due to Drs. Fisk and De Wolf for professional services; to the Connecticut River, Boston and Albany and New Haven and Northampton Railroads, for carrying members of the institution at reduced fares; also to Messrs. Marsh, Lawrence, Slate & Baker and Hamlin, for goods sold at a discount. The following publications have been sent to the institution, free:—"Hampshire Gazette," "Child at Home," "Deaf-Mute Chronicle," "Deaf-Mute Pelican," "Our Dumb Animals," "Silent World."

Attention is invited to the annexed Report of the School Committee, the financial statement, the list of pupils, and the arrangement of hours of study and recreation.

For the Corporation,

GARDINER G. HUBBARD,
President

NORTHAMPTON, January 1, 1872.

REPORT OF THE SCHOOL COMMITTEE.

Report of the School Committee.

MEMBERS:—In the absence of any report from our Principal, abroad, it seems to devolve upon your Committee to supply somewhat in its place. To make the school year and the calendar year more nearly correspond, and to bring the report of the Clarke Institution into harmony as to time with the official reports of other institutions, you will remember that it was voted under October 1st of each year the beginning of the financial year. Hence the fifth annual report will cover the period from October 1st, 1870, to September 30th, 1871, inclusive. But of this period, no small part was embraced in the fourth annual report. For a list of new pupils and their characteristics, as well as the interesting details given by the Principal as to the classification and compositions of the school down to January 1st, reference should be made to that document. From the official report of the Principal, made up at the close of the school year, September 30th, 1871, it appears that, with the first special class, the course of instruction was continued, and with gratifying results.

The record says:—"The whole class has made very satisfactory progress during the term." Of the "second special class" it says:—"They have improved considerably in speaking during the term, and in their use of language also. They have read the 242d page in Jacobs' Reader. They quite readily, except two pupils named] "recognize the language of arithmetic and tell which principle is involved both in mental and written problems. They can perform and analyze examples in the four primary rules, but know nothing of long division. They have read [the little book called] 'Learning to Talk,' and, in 'Learning to Read' they have reached page 20. They have defined and formed sentences on 260 words. They have discussed questions on measurement; on locality, from the map of the United States, and in Guyot's Elementary Geography have reached

page 25. The other exercises of last term have been continued. They have also had occasional lessons on inflection, description of pictures and in learning the names of the bones of the human body."

The "class of 1867," so called, really consists of a few who have since joined, and the very young pupils who entered that year without a knowledge even of the alphabet: the pupils more advanced in age or culture, who entered at the same time, having been transferred to one of the special classes. Of this class it is recorded, that "the exercises have been about the same as those of last term. Its members can perform the mechanical operation of addition, and some of them that of multiplication. They know considerable of the multiplication table, and can solve examples in mental arithmetic in addition and subtraction when language is used. They have taken about 270 new words, and have made marked improvement in their use of language."

No class of 1868 is mentioned, because the pupils who then entered, after some months of instruction, were distributed into other classes for which they were severally fitted. Of the "class of 1869," the record says:—"Its members, during the term, have taken about 400 words [to write, pronounce and make the basis of sentences]. Most of the class can write quite a passable description of a picture. In numbers they read from the lips and answer, and explain such questions as, How many things are four apples, three books, two oranges, five pencils and six stones? They add a column of numbers amounting to one hundred. They can ask and answer a variety of questions. Their improvement in all directions has been very good during the term." Of the class of 1870, the names of, and particulars with regard to, eight, as well as their progress during the first three months, are given in the fourth annual report. After that report was made up, two others came—Ida L. Frost, of Washington, a deaf mute, uninstructed, 14 years of age, and George M. Bradley, of Lenox, a semi-mute, who could read a few sentences, 10 years of age. Of the progress of this class during its second session, the report says:—"The seven small children have, during the term, learned 180 new words. They can answer a variety of such questions as—'Is the door open?' by saying, 'No, ma'am, the door is not open, it is shut.' 'Is the chair on the table?' 'No, ma'am, the chair is not on the table, it is on the floor.' Most of them can write a

ences descriptive of the motions or positions of objects in a ; also of natural objects. They do very well at lip-reading." Laura C. Redden, of whom an account was given in the report, has continued under instruction during the year. She has her voice with increased facility, and reads from the lips readily.

As made from time to time by your Committee, lead them to that the modest and scrupulous record above quoted fails to give an adequate idea of the amount of good done ; and that the results of the year 1870-1, particularly in the matter of mental culture and development, were highly encouraging. No case of sickness occurred.

The statement, strictly belonging to the next annual report, is to be called for. The number of pupils in attendance at the school (January 1, 1872), is 44, a list of whom, including the names of the pupils, is hereto appended. The number of teachers is five, and their faithful, energetic services and excellent management have secured no abatement in the prosperity of the school. It was never in a better condition. A detailed statement of the exercises and results of each class during the first three and a half months of the present school year, has been prepared by the teachers, and also improved specimens of literary compositions by the pupils, all of which is reserved for the next annual report.

In the matter of articulation, Mr. Bell's system has been pursued with the class of 1871. With only such elements of the system as Mr. Bell could communicate to our teachers in a few lessons, better results have been attained in three months than before in the same period of time ; and in the matter of tone, breath, modulation and inflection of the voice, results never before attained at all. It is hoped and expected that the thorough instruction of our teachers by Mr. Bell, at the opening of the next year, will add greatly increased facility to this department of education.

In behalf of the School Committee,

L. J. DUDLEY,
Chairman.

THAMPTON, January 1, 1872.

FINANCIAL STATEMENT OF THE CLARKE INSTITUTION

FOR THE YEAR ENDING

SEPTEMBER 30, 1871.

I. SCHOOL RECEIPTS AND EXPENSES.

The receipts were,—

Amount included in last Report,	\$5,498 4
Cash on hand February 4, 1871,	2,010 5
Received from the fund,	10,191 1
from the State of Massachusetts,	8,625 0
from pupils,	2,167 0
Total,	\$28,492 1

The expenditures were,—

For salaries and wages,	\$7,007 4
groceries and provisions,	5,030 7
fuel and lights,	1,773 4
incidentals,	750 1
Total school expenses,	\$12,561 7
Balance transferred to estate account,	10,926 8
Cash on hand September 30, 1871,	8 7
	\$28,492 1

II. ESTATE ACCOUNT.

This account was opened in May, 1870; the receipts have been,—

From sale of bonds,	\$52,297 4
loans,	35,000 0
current funds from school account,	15,641 7
Total,	\$102,939 1

nditures have been,—

ate purchased,	\$81,410 00
ys and repairs,	60,889 75
ce,	498 75
and payment on debt,	1,541 44
.	275 00
ng,	7,076 11
tal,	1,803 07
<hr/>	
tal,	\$102,989 12

seen that the school expenses proper (\$12,561 79), are not met by from State and private pupils, the balance being drawn from the he fund. This deficiency will be still more hereafter, as the school crease, while the price of tuition has been reduced from \$400 to for private pupils, and \$250 a year for all State pupils coming from New England States. As the debt is gradually paid off from the he fund, it is hoped that the corporation can reduce the cost of tuition

Names, Residences, &c., of Pupils in the Clarke Institution for Deaf-Mutes, October 1, 1871.

NAMES.	Residence.	Time and Place of Instruction before entering Clarke Institution.	Time of entering Institution.	Age at time of Admission.	Cause of Deafness.
Allen, James D.,	Montague,	-	Sept., 1869,	11 yrs. 11 mos.,	Scarlet fever at 6 years 5 months.
Andrews, Mary E.,	Salem,	-	Sept., 1870,	11 years,	Congenital.
Baker, Joseph,	Milton,	-	Sept., 1871,	13 yrs. 3 mos.,	Scarlet fever at 5 years.
Bowers, Frank E.,	Springfield,	-	Oct., 1867,	9 yrs. 2 mos.,	Unknown; before 2 yrs. partially deaf.
Bradley, George M.,	Lenox,	Public school,	Jan., 1871,	10 years,	Cerebro-spinal meningitis at 8½ years.
Bryant, Harriet L.,	Greenfield,	Public school,	Sept., 1870,	15 yrs. 9 mos.,	Scrofula at about 2 yrs; partially deaf.
Barbank, James P.,	Salem,	1 year before he became deaf,	Sept., 1869,	9 yrs. 4 mos.,	Scarlet fever at 6 years 8 months.
Barton, Mary S.,	Lynn,	-	Sept., 1871,	10 yrs. 9 mos.,	Scarlet fever at 4 years.
Cheever, Matthew,	Tyringham,	-	Sept., 1871,	8 yrs. 2 mos.,	Injury of head at 3 years.
Coughlin, John,	Boston,	-	Sept., 1871,	7 yrs. 6 mos.,	Scarlet fever at 3½ years.
Ellsworth, Allie,	Northampton,	-	Oct., 1867,	7 yrs. 3 mos.,	Unknown; at 2 years.
Field, Alice,	W. Westminster, Vt.,	Public school,	Sept., 1871,	18 yrs. 6 mos.,	Scarlet fever at 10 years.
Forbes, Alice V.,	Sherborn,	14 yrs. at Boston School for Deaf-Mutes,	Sept., 1871,	8 yrs. 3 mos.,	Cerebro-meningitis at 13 months.
French, John Y.,	Charlestown,	-	Oct., 1867,	5 yrs. 2 mos.,	Unknown; partially deaf at 2 years.
Frost, Ida L.,	Washington,	-	Jan., 1871,	14 yrs. 4 mos.,	Scarlet fever at 3 years.
Haines, Joel Lupton,	Baltimore, Md.,	-	Sept., 1869,	7 yrs. 6 mos.,	Scarlet fever at 3 years.
Howes, Bertha,	East Dennis,	-	Oct., 1867,	5 yrs. 5 mos.,	Congenital.
Jordan, Harry,	Newton,	1 year at Chelmsford,	Oct., 1867,	9 years,	Congenital.
Keith, Arthur,	Ludlow,	1 year at Chelmsford,	Oct., 1867,	7 yrs. 9 mos.,	Unknown; at 3 years.
Keogh, Michael J.,	Maynard,	-	Nov., 1867,	9 yrs. 6 mos.,	Scarlet fever at 5½ years.
Kirwin, Alfred R.,	South Boston,	-	Sept., 1868,	7 yrs. 7 mos.,	Measles, at 1 year.

Whole number of Boys,	Girls,	Total,
25;	19;	44
Morse, Walter F., McNeil, John, Nevers, Harry W., Perley, Lyman, Porter, Isabel E., Redden, Laura C., Roberts, John, Roby, Fanny, Russell, Emma Mary, Sawyer, George C., Titcomb, Hubert S., Towle, Lawella, Ward, Harry K., Ward, Josephine, Ware, Josephine M., Whittier, Mary Emma, Willey, Florence,	South Dedham, Boston, Bridgeport, Conn., Ipswich, Wrentham, New York City, Boston, East Boston, Hallowell, Me., Charleston, S. C., Newburyport, East Boston, West Haven, Conn., West Haven, Conn., Worcester, Bangor, Me., Lockport, N. Y.,	1 year at Chelmsford, 4 months at Chelmsford, Public school before he became deaf, Public school before she became deaf, 5 years at Hartford Asylum, Sept., 1866, Sept., 1868, Sept., 1868, Sept., 1869, Oct., 1867, Oct., 1870, Sept., 1871, Sept., 1870, Sept., 1870, Oct., 1867, Sept., 1870, Oct., 1867, Oct., 1867, Jan., 1868, Sept., 1869, Oct., 1867, Sept., 1871, 10 years, 8 yrs. 5 mos., 11 yrs. 1 mth., 7 yrs. 2 mos., 8 yrs. 9 mos., - 7 yrs. 7 mos., 7 yrs. 11 mos., 7 yrs. 2 mos., 7 yrs. 1 mth., 11 yrs. 9 mos., 7 yrs. 8 mos., 7 yrs. 2 mos., 5 yrs. 1 mth., 13 yrs. 2 mos., 9 yrs. 10 mos., 13 yrs. 1 mth., Congenital. Typhoid fever at 4 years. Scrofula at 20 months. Scarlet fever between 1 and 2 years. Scarlet fever at 3 years 2 months. - Fall at 3 years. Severe cold at 15 mos.; partially deaf. Measles at 1 year. Measles at 1 year. Scarlet fever at 9 years 4 months. Honor; 1 year 4 months. Congenital. Congenital. Meningitis at 11 years. Congenital. Scarlet fever at 3 years.

TERMS OF ADMISSION.

Institution is especially adapted for the education of semi-deaf and semi-mutes, but others may be admitted. It provides for the pupil's tuition, boarding, washing, fuel and lights, superintendence of health, conduct, and morals.

Charges are three hundred and fifty dollars a year; for tuition alone, \$100; payable semi-annually, in advance, the first week of each term. Absence, except for absences on account of sickness. Extra charges will be made for actual expenses incurred during sickness. *No pupil will be allowed to leave before the end of the second term in July, without weighty reasons to be decided by the School Committee. The contract is for the entire school-year, and is not terminated by the winter vacation.*

The State of Massachusetts appropriates annually funds for the education of deaf-mutes. The Institution, also, appropriates the income from its funds for the benefit of beneficiaries from Massachusetts, according to their need. Forms of application for the State aid will be furnished by the Secretary of the Commonwealth by the Institution.

There are two terms in the year, of twenty weeks each; the first commencing on the third Wednesday of September with a vacation of four weeks in winter; the second commencing on the first Wednesday of March, with a summer vacation of eight weeks. Pupils cannot spend the vacation at school. It is desirable that all applications for admission for the succeeding year made as early as possible.

The year begins on the third Wednesday of September. None will be admitted at any other time, unless they are fully qualified to enter classes as formed, and on payment of the full tuition for the term in which they enter.

Pupils must bring good and sufficient clothing for both summer and winter. They must be furnished with a list of the various articles, each one of which should be marked, and also with paper, envelopes and stamps. A small sum of money, not less than five dollars, should be deposited with the Principal for incidental expenses.

Applications and letters for information must be addressed to the "Principal, Perkins School for Deaf-Mutes, Northampton, Massachusetts," with a stamp to pay postage. All payments should be made to the Treasurer, Lafayette Northampton.

Applicants must be at least five years old on entering the Institution, and must have a certificate of vaccination, and a list of the diseases they have had. The Institution is not an asylum, but a school of learning; and none can be admitted who have not the ordinary growth and vigor of mind and body, and who are not of sound mind and habits.

Persons from Northampton are admitted Thursday afternoons. Strangers at other places excepting Wednesday and Saturday afternoons and Sundays.

AMERICAN ASYLUM AT HARTFORD.

AMERICAN ASYLUM AT HARTFORD.

Board of Directors.

President.

HON. CALVIN DAY.

Vice-Presidents.

JAMES B. HOSMER,
CHARLES GOODWIN,
JOHN BEACH,
HENRY A. PERKINS,

SAMUEL S. WARD,
ROLAND MATHER,
NATHANIEL SHIPMAN,
LEONARD CHURCH.

Directors.

(By Election.)

LUCIUS BARBOUR,
GEO M. BARTHOLOMEW,
JOHN C. PARSONS,
PINCKNEY W. ELLSWORTH,
ERASTUS COLLINS,

JONATHAN B. BUNCE,
OLOOTT ALLEN,
HOWLAND SWIFT,
FRANCIS B. COOLEY,
JOHN C. DAY.

(Ex Office.)

HIS EXCELLENCY, SIDNEY PERHAM, Governor of Maine.

HON. F. M. DREW, Secretary of State.

HIS EXCELLENCY, JAMES A. WESTON, Governor of New Hampshire.

HON. ———, Secretary of State.

HIS EXCELLENCY, JOHN W. STEWART, Governor of Vermont.

HON. GEORGE W. NICHOLS, Secretary of State.

HIS EXCELLENCY, WILLIAM CLAFLIN, Governor of Massachusetts.

HON. OLIVER WARNER, Secretary of State.

HIS EXCELLENCY, BETH PADELFORD, Governor of Rhode Island.

HON. JOHN R. BARTLETT, Secretary of State.

HIS EXCELLENCY, MARSHALL JEWELL, Governor of Connecticut.

HON. HIRAM APPELMAN, Secretary of State.

Secretary.

JOHN C. PARSONS.

Treasurer.

ROLAND MATHER.

Officers and Teachers.*Principal.***EDWARD C. STONE, M. A.***Instructor of the Gallaudet Scientific School.***JOHN C. BULL, M. A.***Instructors.***EDWARD E. BARTLETT, M. A.,****JOHN R. KEEP, M. A.,****EDWARD B. STORRS, M. A.,****WILLIAMS, M. A.,****W. S. CLARK, M. A.,****JOHN WHITON,****WILLIAM H. WEEKS,****MARY A. MANN,****MABEL M. BARTLETT,****MARY E. HASSELL,****CAROLINE C. SWEET,****KATE C. CAMP,****ELMINA D. CLAPP.**

FEET,	<i>Teacher of Articulation.</i>
STONE,	<i>Teacher of Drawing.</i>
W. D.,	<i>Attending Physician.</i>
KENNEDY,	<i>Steward.</i>
CROSSETT,	<i>Assistant Steward.</i>
BE C. WHITE,	<i>Matron.</i>
DECCA A. CODY,	<i>Assistant Matron.</i>
WY DILLINGHAM,	" "
LEWIS,	<i>Master of the Cabinet Shop.</i>
B. FLAGG,	<i>Master of the Shoe Shop.</i>
GARET GREENLAW,	<i>Mistress of the Tailors' Shop.</i>

REPORT OF THE DIRECTORS.

To the Patrons and Friends of the American Asylum.

In any review of the fifty-fifth year of the Asylum, which has just closed, the first thought which occurs to any of its managers is, the special losses we have lately sustained by death.

Rev. Collins Stone, who had ably and most successfully filled the office of Principal of the Asylum since August, 1863, while driving with a friend, on the 23d of December, 1870, was struck by a train from New Haven, at the Sigourney Street railroad crossing, in Hartford, and almost instantly killed. Our whole city, the great circle of the deaf and dumb throughout the country, and the widely scattered friends of Mr. Stone were shocked and deeply grieved by this tragic and deplorable event. To the members of this Board, and to all who were in any manner personally interested in the Asylum, or responsible for its management, the loss of Mr. Stone seemed almost irreparable. There were other learned and skilful instructors of the deaf and dumb, but none whose health, age and knowledge of the history and requirements of our institution appeared to qualify them to fill completely and satisfactorily Mr. Stone's vacant place. After much consideration, Mr. Edward C. Stone, the oldest son of our late Principal, then at the head of the Wisconsin Institute for the Deaf and Dumb, was chosen to succeed his father. The trustees of the Wisconsin Institution were reluctant to part with their chief instructor and manager, but kindly yielded to our request, and Mr. Stone was able to assume the duties of Principal of the Asylum about the middle of February last. So far the Directors are permitted to judge from the short experience of Mr. Stone in his new position, as well as from his previous training and labors elsewhere, among the deaf and dumb, that they feel disposed to congratulate themselves and the friends of the Asylum upon their choice, and to anticipate for Mr. E. C. Stone a career of increasing usefulness and success.

tributes to the character and services of the late Mr. Stone have been brought to the notice of the Directors. Of a public or official nature are appended to this Report, together with the resolutions passed by the Directors at their meeting, held December 26, 1870. Mr. Samuel Porter, friend and associate of Mr. Stone, has recently contributed "Annals" a memorial paper, some extracts from which also be printed in the appendix, as the latest and most carefully prepared estimate of Mr. Stone's life and labors.

There will also be found appended, the resolutions of the Board, in March, 1871, on the occasion of the death of Mr. Barlow Hudson, one of the original corporators of this Asylum in 1826.

Mr. Hudson, though originally one of the youngest members of this society, was from the outset a zealous and efficient laborer in its behalf, and continued in its active service to the end of his life, surviving all but four of his early associates. He was Secretary and Clerk from 1834 to 1860, and chairman of the Directors' Committee from 1836 to the time of his death. About eight years before his decease, he was attacked by a disease which prevented him from constant and active discharge of his official duties; but they were still performed under his superintendence, and only the day before his death he conversed with the Board on matters connected with the Asylum. His acquaintance with the history of this Institution, from its inception, and his intimate knowledge of the details of its management and local interests, make his death a peculiar and great loss to the Board. His warm interest in the Asylum and his cheerfulness of youth, which he never lost, will long keep his memory very fresh among his fellow-laborers in this place.

Notwithstanding these changes which death has made in our ranks, much has occurred during the past year to call for special notice. The report of the Treasurer is encouraging, and the statement of the fund shows, when compared with previous statements, that the encroachments upon it several years since, occasioned by the sudden and unprecedented increase of the expenses of management, have been made good. The income of the fund, however, though considerably increased by judicious and prosperous management, is relatively less than formerly in proportion to the necessarily greater expenses of the present time.

On account of the temporary absence of Dr. Hunt, the usual report

of the Physician has not been presented. We are, however, able to say, that the health of our inmates, during the year, has been remarkably good, and that we have seldom had greater reason for thankfulness in this respect.

The accompanying reports and tabulated statements will interest all connected with this or similar institutions, and we refer to these documents with more than ordinary satisfaction.

In behalf of the Directors,

J. C. PARSONS, *Clerk.*

HARTFORD, April 29, 1871.

RESOLUTIONS.

At a meeting of the Directors of the American Asylum, Hartford, for the Education and Instruction of the Deaf and Dumb, held at their office on the 26th day of December, 1870, Calvin Day, Esq., President, in the chair, the following resolutions were adopted:—

“WHEREAS, This Board has been convened to express our sorrow at the sudden and melancholy death of the Rev. Collins Stone, who was for ninety years a teacher in the Asylum, and has been for the past seven years Principal:

“Resolved, That this calamity, which has filled the hearts of this community with grief, touches this Board in an especial manner, and that we sadly recognize our appreciation of the great loss which the Asylum has sustained by the death of the Principal. He brought to his responsible position an intellect of mature vigor and force, thorough and earnest convictions of duty, great industry and executive ability, quiet firmness of character, dignity and courtesy of demeanor, a love for the unfortunate, and a willingness to work in their behalf with enthusiastic constancy. In the administration of the affairs of the Asylum, he labored earnestly and unweariedly, and with most gratifying success. His long experience in the profession, and his thorough acquaintance with its principles, eminently qualified him for the position he occupied, and placed him among the most distinguished instructors of the deaf and dumb. While we cannot but deeply mourn his departure from among us as a personal loss no less than a public loss, yet the life of Christian activity which he led, inspires in our hearts a blessed and comforting assurance that, though his summons came without notice or warning, he received the Master's promised welcome to a rest eternal and a crown unfading.

“Resolved, That as a token of our respect, we will attend his funeral in person, and that the Clerk of the Board transmit a copy of these resolutions to the family of Mr. Stone.

J. C. PARSONS, *Clerk.*”

Instructors of the American Asylum desire to express sense of the great loss which the institution has sustained by the death of its late Principal, the Rev. Collins Stone. To the deep feeling of personal bereavement is added a sense of publicity which none others can realize so fully as they. None know, as they do, how tireless was his energy and vigilance, how conscientious and unshrinking his faithfulness in every duty, how his own earnest personality pervaded the entire institution, exciting and impelling all—yet in the least obtrusive manner—similar promptitude and faithfulness. He was indeed to be seen in every daily duty, and will ever be in memory, a most beloved and friend, whose loss is well nigh irreparable.

AMERICAN ASYLUM, December 27, 1870.

Following extracts are presented from the brief Report of the Principal :—

In the intellectual department, the results attained are believed to be equal to those of former years ; and, although the progress is slow, and the labor of instruction arduous and perplexing, the obstacles imposed upon our pupils by their misfortune are gradually being removed, and we see them going out with their minds cultivated and strengthened by truth, restored to society, and fitted to be a blessing to the world and to reflect honor upon the institution. Thirty-nine pupils at the close of the last term, three of whom are pursuing their studies further at the National Deaf-Mute College, at Washington. Of the two hundred and sixty-two pupils now under instruction, they are divided into fourteen classes, two of which are composed of new pupils who entered last fall. The class in articulation has been continued, as it was organized the previous year. Instruction in lip-reading and speaking, as an art, rather than as a means of imparting knowledge, has been given, to those most likely to profit by it, for a few minutes of each day, while their education has been carried on by the use of the sign language in their regular classes. Thirty-five pupils have been so taught during the year ; several have been dropped as unprofiting subjects ; and at present the class consists of twenty-two, of whom are semi-mutes. The improvement made in this branch of instruction is commendable.

“ Within the past year, the subject of day-schools for the deaf and dumb, where the children board at home and are taught for four or five hours a day, as other children are, has received some attention in this country, and schools of this kind have been opened at Pittsburg, Boston and Chicago. They must of necessity be confined to the vicinity of large cities, and are not practicable elsewhere. The early instruction of mute children is very desirable, and the philanthropy which searches our great cities, where most of them are found and in the poorest and lowest classes, and which seeks to elevate them, deserves our highest commendation. Still, while the influence of a well-ordered home is so happy, the disadvantages of one that is not so great, that our large institutions, caring for the physical, intellectual and moral welfare of their pupils, in every way, and all the time, and also providing instruction in the trades, would seem to be better adapted to the needs of these neglected ones than day-schools can be. Much good can undoubtedly be accomplished in the day-schools before the child is old enough to be sent away from home, and the results of these benevolent enterprises will be looked for with great interest.

TERMS OF ADMISSION.

The Asylum will provide for each pupil, board, lodging and washing, the medical superintendence of health, conduct, manners and morals, fuel, lights, food, and other incidental expenses of the school-room; for which, including the cost of maintenance, there will be an annual charge of one hundred and seventy-five

In case of sickness, the necessary extra charge will be made.

No deduction from the above charge will be made on account of vacation or absence, except in case of sickness.

Payments are always to be made six months in advance, for the punctual payment of which a satisfactory bond will be required.

Each person applying for admission must be between the ages of EIGHT and TWENTY-FIVE years; must be of a good natural intellect; capable of forming and joining letters with a pen, legibly and correctly; free from any immoral conduct, and from any contagious disease.

Applications for the benefit of the legislative appropriations in the States of New York and New Hampshire should be made to the Secretaries of those States respectively; in Massachusetts, to the Secretary of the Board of Education; in each case stating the name and age of the proposed beneficiary, and the circumstances of his parent or guardian. Applications as above should be made in Vermont, Rhode Island, and Connecticut respectively, to His Excellency the Governor of the State. In all cases, a certificate from two or more selectmen, magistrates, or other respectable inhabitants of the township to which the applicant belongs, should accompany the application.

Persons applying for the admission of *paying pupils* may address their letters to the Principal of the Asylum; and on all letters from him respecting the pupils, the charge will be charged.

The time for admitting pupils is the *second Wednesday of September*, and at no other time in the year. Punctuality in this respect is very important, as it is to be expected that the progress of a whole class should be retarded on account of a pupil who joins it after its formation. Such a pupil must suffer inconvenience and the loss.

It is earnestly recommended to the friends of the deaf and dumb, to have their pupils taught to write a fair and legible hand before they come to the Asylum. This can be easily done, and it prepares them to make greater and more rapid improvement.

When a pupil is sent to the Asylum, unless accompanied by a parent or some other person who can give the necessary information concerning him, he should bring with him a statement embracing specifically the following particulars:—

1. The name, in full.
2. Post-office address, and correspondent.
3. Day, month, and year of birth.
4. Cause of deafness.
5. Names of the parents.
6. Names of the children in the order of their age.
7. Were the parents related before marriage? If so, how?
8. Has the pupil deaf-mute relatives? If so, what?

The pupil should be *well clothed*; that is, he should have both summer and winter clothing enough to last one year, and be furnished with a list of various articles, each of which should be marked. A small sum of money, not less than five dollars, should also be deposited with the Steward of the Asylum for the personal expense of the pupil, not otherwise provided for.

Packages of clothing, or boxes, sent by Express, will reach the pupils safely.

The Express charges should in all cases be prepaid.

Careful attention to these suggestions is quite important.

There is but one vacation in the year. It begins on the last Wednesday of June, and closes on the second Wednesday of September. It is expected that the pupils will spend the vacation at home. This arrangement is as desirable for the benefit of the pupils, who need the recreation and change of scene, for the convenience of the Institution, thus affording opportunity for the necessary painting, cleansing, &c. The present facilities for travel enable most of the pupils to reach home on the evening of the day they leave Hartford. Every pupil is expected to return punctually at the opening of school, on the second Wednesday of September.

On the day of the commencement of the *Vacation*, an officer of the Asylum will accompany such pupils as are to travel upon the railroads between Hartford and Boston, taking care of them and their baggage, on condition that their friends will make timely provision for their expenses on the way, and engage to meet and receive them immediately on the arrival of the *early* train at various points on the route previously agreed on, and at the station of the Boston and Worcester Railroad, in Boston. A similar arrangement is made on the Connecticut River Railroad as far as to White River-Junction. No person will be sent from the Asylum to accompany the pupils on their return, but if their fare is paid, and their trunks are checked to Hartford, it will be safe to send them in the charge of the Conductor.

*the Beneficiaries of Massachusetts in the American Asylum
for the education of Deaf and Dumb, January 1, 1872.*

NAME	Residence.	Age.	Admission.
Acheson, .	West Randolph, .	17 years, .	Sept. 1864.
Acheson, .	" .	11 " .	1869.
E. Anderson, .	S. Framingham, .	13 " .	1867.
Barrett, .	Plymouth, .	19 " .	1865.
Bace, .	Chicopee, .	17 " .	1869.
astin, .	Pittsfield, .	18 " .	1865.
Benjamin, .	Williamstown, .	25 " .	1869.
. Callender, .	Cambridgeport, .	10 " .	1869.
Carter, .	Boston, .	18 " .	Oct. 1866.
Clark, .	Easthampton, .	12 " .	Sept. 1867.
rk, .	Monson, .	17 " .	1865.
. Chapman, .	Cambridgeport, .	16 " .	1865.
omey, .	Foxborough, .	11 " .	1868.
Connors, .	Mansfield, .	15 " .	1865.
Drain, .	Milford, .	10 " .	1870.
Crocker, .	Barnstable, .	12 " .	1869.
Drew, .	Boston, .	15 " .	1865.
Duran, .	South Boston, .	16 " .	1865.
Estabrook, .	Assabet, .	12 " .	1870.
urley, .	Lowell, .	18 " .	1868.
eming, .	Barre, .	12 " .	1869.
Frisbee, .	Charlestown, .	16 " .	1869.
mbol, .	South Boston, .	17 " .	Oct. 1864.
Gerry, .	Charlestown, .	18 " .	Sept. 1868.
Gardner, .	Hardwick, .	16 " .	1864.
Hargrave, .	East Boston, .	14 " .	1867.
. Hawley, .	Leverett, .	11 " .	1869.
Hawley, .	" .	16 " .	1865.
Hawley, .	" .	18 " .	1865.
O Hayden, .	Stoughton, .	18 " .	1868.
. Jellison, .	Lynn, .	12 " .	Oct. 1870.
P Josselyn, .	East Foxborough, .	18 " .	Sept. 1868.
Kellaher, .	Sandwich, .	12 " .	1869.
E. Knight, .	West Boylston, .	17 " .	1868.
Lucy, .	Haverhill, .	12 " .	1868.
W. Larvey, .	Gloucester, .	13 " .	1868.
skintosh, .	Canton, .	16 " .	1864.
Carty, .	Andover, .	16 " .	1865.
McWilliams, .	Fall River, .	15 " .	1870.
acham, .	Chester, .	18 " .	1868.
eil, .	Palmer, .	12 " .	1867.
O'Neil, .	Springfield, .	16 " .	1866.
Paul, .	Cambridgeport, .	11 " .	1867.
. Perry, .	Milton, .	13 " .	1868.
owers, .	Boston, .	16 " .	1865.
uincy, .	Monson, .	16 " .	1865.
Roberts, .	Boston, .	14 " .	1866.
haler, .	Palmer, .	13 " .	1869.

List of Beneficiaries of Massachusetts, &c.—Concluded.

NAME.	Residence.	Age.	Admission.
Joseph W. Soper, . . .	Lowell, . . .	12 years, . . .	Sept. 186
Wilber N. Sparrow, . . .	Eastham, . . .	18 " . . .	186
Ebenezer E. Staples, . . .	Taunton, . . .	12 " . . .	186
Frank Streeter, . . .	Northfield, . . .	12 " . . .	186
Samuel A. Tufts, . . .	Malden, . . .	15 " . . .	186
Samuel Wardman, . . .	Andover, . . .	16 " . . .	186
Benj. D. West, . . .	Chilmark, . . .	18 " . . .	186
Charles E. Wood, . . .	Boston, . . .	13 " . . .	186
John McGinnis, . . .	Worcester, . . .	25 " . . .	187
John F. Carrigan, . . .	Littleton, . . .	10 " . . .	187
Wm. F. Young, . . .	Boston, . . .	19 " . . .	187
Alda M. Adams, . . .	Charlestown, . . .	16 " . . .	186
Ada J. Barnard, . . .	Lowell, . . .	16 " . . .	186
Edith A. Boynton, . . .	Enfield, . . .	10 " . . .	186
Mary Carey, . . .	Boston, . . .	17 " . . .	186
Abby L. Chaffin, . . .	Worcester, . . .	15 " . . .	186
Bridget Coggina, . . .	Lowell, . . .	15 " . . .	186
Ellen Duffy, . . .	Boston, . . .	16 " . . .	186
Honora Fahy, . . .	Pittsfield, . . .	11 " . . .	186
Martha A. French, . . .	Tewksbury, . . .	11 " . . .	187
Annie Glinnon, . . .	Jamaica Plain, . . .	10 " . . .	186
Sarah Hawley, . . .	Leverett, . . .	10 " . . .	186
Mary J. Hawley, . . .	" . . .	10 " . . .	187
Mary J. Lee, . . .	East Longmeadow, . . .	14 " . . .	186
Elizabeth Martes, . . .	Charlestown, . . .	15 " . . .	186
Elizabeth McDonough, . . .	Russell, . . .	17 " . . .	186
Morcellia Meacham, . . .	Chester, . . .	14 " . . .	186
Eliza O'Hearn, . . .	Tewksbury, . . .	19 " . . .	186
Julia Parsons, . . .	Gloucester, . . .	16 " . . .	186
Mary Quinn, . . .	Williamstown, . . .	11 " . . .	186
Ellen B. Reekie, . . .	Clinton, . . .	11 " . . .	186
Margaret Reekie, . . .	" . . .	17 " . . .	187
Amelia Richardson, . . .	Mansfield, . . .	15 " . . .	Oct. 186
Ella J. Soper, . . .	Lowell, . . .	14 " . . .	Sept. 186
Lizzie A. Stevens, . . .	Gardner, . . .	14 " . . .	186
Mary A. Stevens, . . .	Gloucester, . . .	13 " . . .	186
Marion S. Taft, . . .	Worcester, . . .	16 " . . .	186
Emma J. Tilton, . . .	Cheshire, . . .	14 " . . .	186
Jennie M. Tisdale, . . .	North Bridgewater, . . .	14 " . . .	186
Susanna Wardman, . . .	Andover, . . .	13 " . . .	186
Deidamia West, . . .	Chilmark, . . .	15 " . . .	186
Annie K. Woolson, . . .	Hopkinton, . . .	11 " . . .	186
Catherine S. Megel, . . .	Swampscott, . . .	10 " . . .	187
Nellie F. Stuart, . . .	Rockport, . . .	11 " . . .	187
Catherine S. Hamilton, . . .	Dorchester, . . .	20 " . . .	186

BOSTON SCHOOL FOR DEAF-MUTES.

BOSTON SCHOOL FOR DEAF-MUTES.

[Statement of GEORGE F. BIGELOW, M.D., one of the Committee, furnished by request.]

Committee.—IRA ALLEN, M. D., *Chairman*; SAMUEL G. BOWDLEAR, HENRY S. WASHBURN, LIBERTY D. PACKARD, M. D., REV. GEORGE F. HASKINS, LUCIUS SLADE, GEORGE F. BIGELOW, M. D.

Instructors.—MISS SARAH FULLER, *Principal*; MISS ANNIE E. BOND, ELLEN S. BARTON, MISS MARY H. TRUE.

List of Pupils.

NAME.	AGE.		Residence.	Date of Admission.
	Yrs.	Mos.		
Harry E. Babbitt,	10	2	Boston,	Oct. 4, 1871.
Jeremiah Cahalan,	9	2	"	Nov. 10, 1871.
Mary E. Carroll,	11	11	Charlestown,	10, 1871.
Lizzie E. Chaffin,	6	8	Brookline,	Apr. 10, 1871.
Emma Collins,	9	7	Boston,	Dec. 13, 1871.
Michael Coughlan,	10	7	"	Nov. 10, 1871.
John Coughlan,	7	9	"	10, 1871.
Samuel S. Cross,	17	2	Beverly,	Dec. 5, 1871.
George E. Dailey,	8		East Cambridge,	May 2, 1871.
Julia A. Driscoll,	20	4	East Boston,	Jan. 19, 1871.
Joseph Finnegan,	11	7	Boston,	Nov. 22, 1871.
Isabel Flagg,	17	10	"	30, 1871.
Alice V. Forbes,	8	7	Sherborn,	30, 1871.
Jane Howes,	11	3	Boston,	Jan. 31, 1871.
Jeremiah Hurley,	14	5	East Cambridge,	10, 1871.
Alice C. Jennings,	20	10	Auburndale,	Sept. 19, 1871.
Honora Kenney,	9	1	Boston,	Jan. 6, 1871.
John S. Kenney,	9		Woburn,	Oct. 18, 1871.
Annie R. Leavitt,	7	2	Boston,	Nov. 1, 1871.
Leah Leudoza,	12	5	"	Apr. 18, 1871.
Mary A. Linehan,	16	5	"	Nov. 10, 1871.
Michael Lynch,	10	8	"	Apr. 18, 1871.
Ida L. Marshall,	9	1	Lowell,	Nov. 15, 1871.
Catherine McDonald,	15	7	Boston,	10, 1871.
Charles G. Merry,	12	10	"	Dec. 18, 1871.
Ella D. Moore,	14		Lawrence,	Sept. 6, 1871.
Martin Mullen,	10		South Boston,	Nov. 11, 1871.
Ignatius Murphy,	9	7	" "	15, 1871.

* Date of dismission May 1, 1871.

† Date of dismission Sept. 4, 1871.

‡ Date of dismission June 23, 1871.

§ Date of dismission June 30, 1871.

NAME.	AGE.		Residence.	Date of Admission.
	Yrs.	Mos.		
O'Brien,	9	7	Boston,	June 27, 1870.
Donnell,	12	4	"	Dec. 6, 1869.
erra,	10	8	"	Nov. 10, 1869.
Orcutt,	8	5	"	15, 1869.
ee,	8	4	"	10, 1869.*
Pierce,	17	5	"	May 19, 1871.
an,	10	5	"	Nov. 10, 1869.
rt,	6		"	May 31, 1870.*
Robinson,	16	10	"	Sept. 6, 1870.
omas,	9		"	Nov. 14, 1870.
Tripp,	8		"	22, 1869.
White,	8		"	Oct. 17, 1870.
ow,	11	1	"	Nov. 28, 1869.
Wood,	9	1	"	Sept 8, 1870.

Admitted since commencement of term 1871-72.

ee,	8	6	Boston,	Dec. 12, 1871.
to,	14		"	Sept. 20, 1871.
illy,	5		"	25, 1871.
an,	7	10	West Roxbury,	Nov. 1, 1871.
oney,	8		Boston,	17, 1871.
Daniell,	18	11	"	Oct. 2, 1871.
Sawyer,	10	7	Charlestown,	Sept. 4, 1871.
Keating,	7	10	Natick,	Feb. 15, 1872.
Taylor,	20		Boston,	Sept. 4, 1871.

* Date of dismissal Nov. 30, 1870.

one of the Public Day Schools of the city of Boston, and of the other schools it is under the charge of a special e appointed annually by the School Board from its own The whole number of pupils during the year was 41, verage attendance of 37. The School was established in was designed to furnish instruction to deaf-mute chil- ng in the city without the necessity of sending them ions at a distance from their homes. The method pur- that in the Clarke Institution, is known as the German The manual alphabet and the sign language are not , but the pupils are taught to speak and to read the lan- others from the lips. In carrying out this system, even d experience of the School, the first of its kind in this ndicates a great advantage enjoyed by children living at

home, where they are surrounded by hearing persons, and thus incited to use the power of speaking as they acquire it in school, over those of the same class congregated in numbers under one roof, where the temptation to communicate by signs is so constant that they fail to employ their acquired power of speech as they would otherwise do. At home, too, they form a part of the family circle, with common interests and sources of occupation and amusement, and as they become able to communicate with those about them in a common tongue, they gradually cease, both in feeling and in fact, to belong to a peculiar and unfortunate class shut out by their infirmities from the world, and unable to mingle in the enjoyments of social life.

When the School opened, the youngest class, composed of pupils between the ages of seven and ten years, was wholly unacquainted with the written or printed forms of letters. They were now perfectly familiar with both, and have a vocabulary of nearly five hundred words, which they form into as many sentences, and they have acquired sufficient command of language to enable them to communicate their simple wants and to give intelligent answers to many questions. They also understand directions expressed in a variety of ways. Such sentences as the following are readily comprehended: "All of the Third class, except Joseph, may read from their small books."—"You must not be rude when you play."—"Ask Daniel if he wants to go to the store and buy a lunch."—"Please get your books and bring them to me." The children read from the lips of the teachers the most familiar words and sentences, and will also read the same from the lips of any person, although not so readily. The progress of all the children in language has been highly satisfactory. All the branches comprised in the Grammar and Primary School courses are taught, except singing. The school has been graded and classified corresponding nearly to the several grades in the common schools, though the series will not be complete until the beginning of the next year, when a "First Class" will be organized.

During the month of April of the present year, a highly important feature was added to the methods of instruction employed in the school, concerning which too much cannot be said in commendation. This was the introduction of the system of "Bible Speech," invented by Professor Alexander Melville Bell of London. "The fundamental principle of the system is, the

s of sound are symbolized by relations of form. Each and each mode of organic action concerned in the production of sound has its appropriate symbol; and all of the same nature produced at different parts of the are represented by a single symbol turned in a direction according to the organic position."

First application of the system to the instruction of deaf was made in 1869, in South Kensington, England, by Mr. Charles Bell, a son of the inventor, with a small class in a school. "No difficulty was found in giving the idea of symbols to four children, the eldest twelve, and the youngest years of age, and nearly all the elementary sounds of English were obtained from them in a few days." Mr. Bell was invited to visit Boston for the purpose of imparting the system to teachers and pupils in its deaf-mute school, and was so employed during the months of April and May, with results equally interesting and surprising. "On the 18th of June a public exhibition was given of the condition of the school, and it was shown that the very youngest children had comprehended the meaning of the symbols. Taking the school as a whole, it was found that during the month of May over three hundred English sounds, which the pupils had formerly failed to utter by imitation, had been obtained by means of 'visible speech.' Class illustration was given of the pronunciation of syllables with differences of position and quantity, and individual illustration of the perfect articulation of words and sentences. Adult deaf mutes were present who had acquired all the sounds of the English language in ten years, and who could articulate a large number of words with perfect correctness. One pupil of the school, to whom special attention had been given in the principles of elocution, read Lowell's 'Psalm of Life,' from elocutionary marks with perfect and expressive inflections of the voice."

The applicability of this simple and beautiful system of symbols to the instruction of congenital mutes, as well as of those partially deaf who have lost their hearing, renders it a priceless boon to the world engaged in imparting articulation to deaf mutes, and arrangements have already been made for Mr. Bell to visit Northampton and Hartford, and to introduce his system into those institutions.

REPORT OF A COMMITTEE UPON THE NEW METHOD OF INSTRUCTION
FOR DEAF-MUTES, DECEMBER, 1871.

An examination took place in the School for Deaf Mutes at Pemberton Square, of several pupils, deaf and dumb, who have been for three months under the instruction of Mr. A. Graham Bell. The effects produced by this instruction are in the highest degree wonderful; indeed, almost miraculous. Several have been taught to utter distinctly all the sounds of the language, and one of them pronounced accurately words offered by gentlemen present, from a European and from an Oriental language containing strange sounds not belonging to our language. Another, Miss Flagg, recited, in a sweet and natural manner, with all the inflections and modulations that a well-taught hearing person could have given, a comic quarrel between a husband and wife about "Is it a thrush or a starling?"

At the end of the examination Mr. Philbrick, Superintendent of the Boston Schools, was requested by a unanimous vote to take measures to procure a hall sufficiently large to accommodate a much larger audience and to arrange for a future meeting, and another committee was chosen to report the perfect success of Mr. Bell's methods, and to invite all persons, especially those interested in the marvellous powers of the human voice, and those who wish to see for themselves the original scientific methods by which it can bestow, upon those from whom it has been withheld, the power of communicating their thoughts and feelings by the use of the human voice divine,—that every mother who has never heard her child speak may hope to hear it in a pleasant, natural voice.

Mr. Bell is the son of the gentleman in London, Professor Melville Bell, who first—by unwearied experiments on the organs of speech—invented what he calls "visible speech," an invention which promises to give complete success to the art of teaching the deaf and dumb to speak. Mr. Bell began by giving a rapid account of the invention, and exhibited on the blackboard the characters of symbols devised, which are an imitation of the parts of the organs of speech used in the utterance of the several sounds. He then stated that the object of the experiments he had been making, during the last three months, has been to test the possibility of educating the mouths and voices of deaf mutes. He introduced to us two young ladies who had, during that time, be-

his instructions: Miss Alice O. Jennings, daughter of the Jennings of Auburndale, and Miss Theresa Dudley, daughter of the Hon. L. J. Dudley of Northampton, and asked attention to the latter, who is a congenital mute. She had been educated at home, at the institution at Hartford, Conn., and several years under Miss Rogers, Principal of the Northampton Institution where she had been using her vocal organs.

In September, Superintendent Philbrick, Secretary White, Dr. Nathan, Chairman of the Boston School for Mutes, and several gentlemen had examined the condition of Miss Dudley's education, that Miss Rogers might have full credit for the very useful work she had accomplished; and that the improvement of the principles of "visible speech" might be justly appreciated. The defects had been shown to be in sounds of o, the vowels w, r, l, and in all the double consonants; indistinctness of understanding her conversation or reading. The following points were also observed:—

1. That a few of the elementary sounds were defective. These were the vowels in the words pool, pull, pole, Paul and poll, the consonants wh, w, r, l. The vowel ee was only occasionally correct.

2. All double consonants were defective. For instance, ch, j, &c.

3. Rapidity of utterance had been gained at the expense of clearness.

4. It was difficult for strangers to understand her conversation and impossible for them to follow her reading.

5. Her voice was under no sort of control, and it was not uniform in quality.

6. Bell says: "Miss Dudley has been under my instruction for several months. The improvement manifest may be emphatically set up in the one word 'power.' She has obtained power in the instrument of speech,—such power that she can produce elementary sounds of foreign languages as well as those of English, by merely studying their symbols; that she can vary her *quality* as well as pitch, sustain it on one level, or inflect it, and that she can appreciate certain musical intervals.

7. We have devoted principal attention to Miss Dudley's articulation. In Miss Jennings' case I have aimed at the cultivation of the principles of the communication of elocutionary principles. Miss

Dudley varies her voice *mechanically*, but Miss Jennings can now associate a *feeling* with every inflection. The latter also possesses the mysterious power of appreciating *relative pitch*. Both of these young ladies are apparently *totally deaf*.

"I was anxious to ascertain how far the power of recognizing musical intervals could be educated, but having more important work to do, I did not make the attempt with these pupils. Miss Fuller, however, permitted me to experiment upon the voice of one of her scholars, Miss Isabel Flagg, and I shall exhibit to you to day what I consider a scientific curiosity—perhaps of little practical value—namely, the phenomenon of a deaf person *mechanically singing*. Miss Flagg will afterwards recite, with elocutionary effect, a little humorous sketch, which we may call 'Thrushes vs. Starlings.'

"I shall now write a few exercises on the board for Miss Dudley to read. The sounds will be of such a nature that it would be impossible for her to give them by imitation alone. I shall write German and French sounds, and some words in the Zulu language containing Hottentot clicks that would defy the imitative power of any one here present."

Mr. Bell then wrote on the board, in the symbols of "visible speech," sentences in English, in German and in French, and some words in the Zulu language containing Hottentot clicks never heard in our speech; all of which Miss Dudley read slowly, but with surprising correctness, and gave the clicks in a way which nobody else present could imitate. She afterwards read from the symbols of "visible speech" the Lord's Prayer, slowly but very distinctly, with almost faultless articulation, and with apparently deep feeling.

Mr. Bell said that it will require long and patient practice of oral gymnastics before she is able to speak fluently; but he showed enough to prove that the end he is aiming at, *perfect and pleasing articulation*, is certain.

GEORGE B. EMERSON,
JOHN D. PHILBRICK,
LEWIS B. MONROE,
J. W. CHURCHILL.

Committee.

EXPENDITURES, 1871.

annual cost to the Commonwealth of supporting a pupil in the Deaf-Mute Schools is as follows:—

American Asylum,	\$175 00
Institution,	250 00
School, tuition, residents of the city, . .	100 00
Residents,	150 00

Amount of the appropriation for the support of pupils during the year 1871, was . . . \$80,000 00

Amounts paid on this account during the year, were,—

American Asylum,	\$17,504 02
Clarke Institution,	7,768 09
Boston School,	2,283 33
Baldwin Place Home, for board of one pupil,	50 00
	<hr/> 27,555 44

Unexpended balance of appropriation, Jan. 1, 1872, . \$2,444 56

AN ACT RELATING TO DEAF MUTES.

Enacted, &c., as follows:

SECTION 1. No beneficiary of this Commonwealth in any institution or school for the education of deaf mutes shall be withdrawn from except with the consent of the proper authorities of such institution or school, or of the governor of this Commonwealth.

SECTION 2. This act shall take effect upon its passage.

Approved May 17, 1871.

REPORT

OF THE

GENERAL AGENT OF THE BOARD.

AGENT'S REPORT.

Gentlemen of the Board of Education:—

It was my purpose, until a few days since, to confine myself, in my Fifth Annual Report, to a compliance with your vote instructing the Agent of the Board, agreeably to suggestions made by his previous reports, "to prepare a report on the condition of school-houses throughout the State, and also a report presenting plans and descriptions of model school-houses suitable for country towns, &c." I have prepared a partial report, presenting as precisely as seemed desirable the condition of school-houses in all towns of nearly three counties, from information gathered from personal observation, and from other reliable sources, and can in a similar manner go through with all the other counties of the State. It will, however, require more of my time, and occupy more space in your annual report, than may seem to you expedient, and yet such a report only can give a full and definite knowledge of the subject. I do not at present submit this partial report, but wait your further instructions as to the expediency of completing it. The other report that you instructed me to prepare, "presenting plans and descriptions of model school buildings," will be attended with considerable expense for engraving and printing the plans to be presented, which, in the absence of any appropriation for this purpose, I did not feel authorized to assume. When so authorized, such a report can soon be prepared for distribution to committees and others needing the information which it may contain, and also be embodied in my next annual report.

My duties during the year have been of the same general character as in the four preceding years of my agency, and are so understood by you as not to need a particular statement of them. They are briefly defined in the words of the statute to be, "to visit the several towns and cities for the purpose of inquiring into the condition of the schools, conferring with teachers and

for only a portion of the time, usually the last two days, and thus lose very much of the benefit to be derived from constant attendance upon the exercises. To meet this serious difficulty, and to give increased efficiency to the Institutes, I would renew the recommendation made once and again in previous reports, that the legislature be requested to pass an Act similar to that of New York and some other States, "which shall provide that the school committee of any town may, in their discretion, authorize and require the teachers under their charge to attend any Teachers' Institute which may be held under the sanction of the Board of Education in such town, or in any adjacent town, and that, in case of such attendance, the time so spent shall not be deducted from the term of service, and shall also be counted, in the return made to the Board, as actual school time." Much regret is usually expressed, not only by the teachers, but also by the committees themselves, who attend only the closing exercises, and do not become fully aware of their character and benefits, that they have not been present during the entire session, and assurances are given that whenever another shall be held within reasonable distance they will avail themselves of the full benefit of it.

These Institutes were all held for the usual period of five days with the exception of the one in West Newbury, which commenced on Wednesday instead of Monday in consequence of the State election occurring on the preceding Tuesday. The entire series was a very successful one, judging from the opinions of those in attendance, which in every instance were expressed either in resolutions or in some less formal way, accompanied by an invitation to hold another Institute as soon and as often as was deemed it expedient.

As a specimen of the more formal resolutions, I submit the following, which, preceded by remarks of a similar character by some of the leading citizens and friends of education from abroad, were unanimously adopted at the close of the first Institute, the one in Medway:—

Resolved, That the present session of the Institute, in its practical teachings and illustrations, has given us in brief both the model teacher and school, and that the Institutes, as conducted by the present Board, are meeting and supplying the highest needs of those who have the educational charge of our Public Schools; therefore,

Resolved, That we believe it the duty of all school committees and

of education to use all laudable means to secure the early and attendance of teachers upon this State means of improving

ed, That we, teachers and citizens, who have attended the of this Institute, express our great obligation to the Board and its agents for the opportunity of enjoying its life-benefits in this vicinity.

ing exercises and lectures at the day sessions were given the Institutes by Professors Wm. H. Niles and Lewis B. , of the Institute of Technology, Boston; Mr. G. A. Wal- Westfield; Mr. O. H. Bowler, of Boston; the Secretary e Agent of the Board; at five of the Institutes by Mr. of the Salem Normal School; at three by Mr. Boyden, of edgewater Normal School; at one by Mr. Dickinson, of the ld Normal School, and Miss Johnson and Miss Eaton of the gham Normal School; at four by Mr. Walter Smith, Direc- Art Education. The evening lectures were given by ors Niles and Monroe, the Secretary and the Agent; one by ith, and one by Mr. Philbrick, a member of your Board. e one evening lecture given at each Institute by Prof. Mon- gave readings after the lectures on two other evenings.

the generous hospitality of the citizens in all the towns the Institutes were held, I would express my own hearty and those of my associates, and of all others in attend- All were provided for most liberally and kindly. To the of the several railroads, granting me permission to issue urn tickets to those in attendance upon these Institutes, I renew the expression of my thanks for their prompt and l compliance with my request for such favors. In no case h a request been refused.

aking preliminary arrangements for the Institutes, I have y visited the towns where they were to be held (and some- two or three such visits to the same place are necessary), en practicable I have also visited several of the adjacent with especial reference to awakening an interest in the sub- d so secure a better attendance. Such effort is particu- necessary in those parts of the State in which Institutes have en held, and their object is not fully understood. I have epared and sent to the school committees in many towns e place where each Institute was to be held circular letters

explaining the object of the Institute, and requesting that, when the schools were in session, the teachers might be allowed to call on them so as to attend the Institute. Posters are also prepared to be sent to many towns; each Institute is advertised in several newspapers; and arrangements are made with railroad officials and for the printing of the free return tickets. All these preliminary arrangements are in the highest degree essential to the success of the Institute; but they require much time, and with only seven weeks of constant attendance upon the exercises of the Institutes prevent me from accomplishing more in the way of visitation, school inspection, and other related duties.

ADMISSION TO NORMAL SCHOOLS.

I have frequently, at your request, attended the examination of applicants to enter the Normal Schools,—the three in the eastern part of the State,—to represent the Boards of Visitors in deciding who should be admitted. I have at such times generally made a very careful and critical examination and analysis of the responses presented in the papers of the applicants, for each one is required to present at least four written papers containing answers to the printed questions on the subjects in respect to which they were examined. I have before me a very full analysis which I made at one of these examinations, and, as I think it is a fair specimen of all of them, I ask your attention to a few of its details. Of the forty-eight examined, seven-eighths lived in Massachusetts, the average age of all was eighteen years and nine months. Twenty-one of the thirty-seven ladies examined were graduates or had been members for some time, of High Schools, five of Academies, and the other eleven of Grammar Schools. Nine of these had taught schools for a period varying from twelve weeks to one hundred and forty-three weeks. I do not find upon any paper any minutes with regard to the kinds of schools previously attended by the eleven young men who were examined, or whether any of them had ever taught. The questions in geography, history, arithmetic and grammar, had been prepared by the Principal of the school, and were not above the average of questions proposed to candidates for admission to our High Schools. There were no “catch questions,” nor, as is frequently the case, were there one or two more difficult questions on each subject to test the maximum ability of the applicants. The words for

all practical, every-day words. I think you would all think me, that, under the circumstances, there should have been an average of at least eighty per cent. of correct answers. But, however, had this average, and only eleven had seventy per cent. Eighteen had less than sixty per cent. To attain this result, their reading had to be taken into account, for they were marked much higher than for their written answers, and this gave them a higher average. With this, the average of correctness for all who were examined was seventy per cent. ; without it, fifty-nine. Several of these applicants passed a very satisfactory examination in everything ; several in most of the subjects, but did not do so well in one or two branches, for which there was a satisfactory explanation. Results in many other cases were not satisfactory, nor credited yet, following the established precedent of admitting on a low general average of correctness rather than my conviction what should be done under such circumstances, only forty-eight were rejected, and seven, somewhat doubtful, were admitted on probation. An examination of the papers of applicants shows that in too many instances the writers allowed to take up the higher branches of study in High Schools and Academies before they had thoroughly mastered the elementary branches, which are the corner-stone in a good education.

* * * * *

Papers of many were very faulty in respect to the correct language, the construction of sentences, the use of capital letters and spelling. In view of such facts, I cannot repeat too often, nor emphasize too strongly, the words of Everett in regard to the great importance of these elementary branches :— "These are the foundation, and, unless you begin with these, all lofty attainments, a little natural philosophy, and a little metaphysics, a little physiology, and a little geology, and all your *ologies* and *osophies*, are but ostentatious rubbish." Says a distinguished educator, "to make room for what are the higher studies, it is necessary to remove the so-called rubbish. It strikes one that the room is hardly worth the making, without the lower to support them, the higher must be increased, and the more these are expanded, the larger the plan of the superstructure, the larger also, and the more substantial, the foundation."

I have presented this topic thus prominently, and with minuteness of detail, to give emphasis to the recommendation that I would make, that a more thorough and exact knowledge of the common English studies should be required as indispensable for admission to our Normal Schools than has heretofore been.

I am decidedly of the opinion, too, that it would be wise to add a year to the minimum age required for admission, at least for the ladies, and not admit any under seventeen years of age, but rather than to admit them at sixteen, as now required, or consider those under sixteen, as occasionally permitted. With a higher standard of scholarship for admission, and with greater maturity, physical and mental, of those admitted, I think we should secure a superior class of teachers for graduation, and thus elevate the character of our Normal Schools.

SCHOOL AGE.

The age at which children may be admitted to and excluded from Public Schools is not legally defined, and the subject is unfrequently agitated in towns visited by me. In one place I found many of the citizens, for certain local reasons, wishing to exclude from school all over fifteen years of age, and asserting that they were under no legal obligation to make provision for the education of any beyond that age. This impression, which I have found somewhat prevalent elsewhere also, grows out of the fact that the number of children between five and fifteen years of age is made the basis for distributing the school fund among the towns in the State, and hence is supposed to define the age at which the people are bound to provide means of education. The same statute, however, that makes this limitation of age for the apportionment of the school fund, provides that nothing in the Act contained shall be considered as prohibiting the attendance upon the schools of scholars under five or over fifteen years of age. City Solicitor Healy, whose opinion on this subject was asked by the Boston School Committee in 1859, says:—

“This provision was not intended to confer upon scholars under five or over fifteen years of age, any right to attend the schools; it was intended merely to negative the otherwise possible construction of the statute, that the school committee have not the power

the schools, in their discretion, pupils not between the ages of five and fifteen years.

The committee, then, may not exclude from the schools persons under the ages of five and fifteen years; but they may admit or exclude, in their discretion, all persons under five or over fifteen years of age.

In the twenty-fourth annual report of the Secretary of the State, Mr. Boutwell says:—

"It is not to be assumed that the legal rights of children in the Public Schools are limited to the period when they are between five and fifteen years of age, for it cannot be doubted that youth under twenty years of age are entitled to the benefits of the Public Schools, and the committees may exercise a discretion in excluding those who are not physically and intellectually qualified, even though they are under five years of age."

The fact that twenty-two thousand persons over fifteen years of age, or more than one-tenth of the whole number in average attendance upon our schools during the year, enjoyed the advanced education so liberally provided for them, shows that this interpretation of the statute is accepted by the great body of the people.

Still, for the reason above given, I have thought it desirable to present this topic in my report. It is to be regretted, I think, that the statute does not absolutely prohibit the admission of children into our Public Schools under five years of age, and make it a penal offence for parents to send them at an earlier age. Better still, if children were not permitted to enter the school-room under six years of age, until their brain and nervous system are better prepared for so severe an ordeal, and then for a few hours at least not confined there—for what else is it to confine them at that tender age, but confinement?—more than half the number of regular school-hours, each half of the day. I say that nearly three thousand children under five years of age were in attendance upon the Public Schools of our State during the year, and that the greater part of them were compelled to breathe the vitiated air of school-rooms, and to sit quietly on benches, for five and often six hours a day, for five days in the week, does it not suggest the necessity of some legal prohibition to remedy an evil so deplorable in its consequences, immediate and prospective?

HIGH SCHOOLS.

During the past year one hundred and seventy-nine High Schools have been maintained in one hundred and sixty-five cities and towns. I have visited within a few years very many of these, and have found quite a number of them not what might be expected from the name. Still, even in the poorest of them, with all the deficiencies of apparatus, books of reference, and other things which I have spoken in previous reports, greater advantages for higher education are presented than could be furnished by other schools in the same towns. I have spoken of these "High" Schools because they are popularly so called; but no statutes relating to them nowhere so designate them. They are *town* schools "*for the benefit of all the inhabitants of the town*" in distinction from *district* schools, which are for the benefit of districts only. Many a *town* school has been defeated because it had the misfortune to be called a *high* school. As these schools are open to all, they are, as Mr. Mann once said, "emphatically the poor man's school."

So highly are these advantages appreciated, that in many instances pupils living at remote distances from the school will overcome every obstacle that interferes to prevent their availing themselves of them. To attend the High School which was kept six months in one of the small country towns, having a population of less than twelve hundred, one young man daily walked ten miles, and during the six months was absent but once. In another instance, a young man and his sister, living four miles from the High School, walked that distance morning and evening in sunshine and in storm, for three years, and after completing their course of study, went to one of our Normal Schools, and are now ranked among the successful teachers of our Public Schools. Numerous facts of a somewhat similar character have come under my knowledge.

Many of these schools in the cities and large towns are provided with large, convenient, beautiful, and in some cases costly buildings, furnished with all needful appliances, and affording the means of acquiring, without expense to the pupil, an education more extensive and complete than can be acquired in many of the so-styled Colleges of our country. The Principals of many of these schools are thoroughly educated, and not un-

receive quite liberal salaries. Five have \$4,000 each; three, \$3,250; two, \$3,000; five, \$2,500; two, \$2,400; three, \$2,250; and forty others from \$2,000 to \$1,500. I am frequently invited to attend the graduating exercises of these schools, as well as those of lower grades, and it is pleasant to see the increase in the respect with which so many of them are regarded by the more educated portion of the citizens. Their influence, when they are fully and liberally supported, is incalculable. From them colleges receive their largest, and often their best, supplies. Not only do the High Schools in our large cities give a thorough preparation for College to all who desire it, but in some of the smaller towns similar advantages are enjoyed. I might name many such, but will select from my notes facts relating to one or two of those visited by me during the year. From the High School of Woburn, a town having a population of less than nine thousand, twenty graduated last June, five of whom were going to college. Including these five, there were twenty-eight members of the school studying with reference to a collegiate education. Others who were fitted at this school were at that time in various Colleges. At the Fitchburg High School there were twenty last summer who were studying to enter the Sophomore class in College, and several others are now members of College in that same town.

Some of the High Schools in the vicinity of Boston do not send any to College as they would if so many boys living in the surrounding towns were not permitted to attend the Boston Latin School without (until, perhaps, quite recently) being required to pay anything for their tuition there. At my last visit to this school, less than a year since, there were forty such boys belonging to it. It is very kind and liberal for Boston thus to throw open its schools for the gratuitous instruction of those who have no money upon it, and for whom provision is, or would be, made elsewhere; but the schools from which these boys are withdrawn, and from the proper maintenance of which the interest of their education is also withdrawn, must, as they do, suffer very much in consequence.

There is one peculiarity in the management of the Woburn High School which, for several reasons, is worthy of special mention. The "half-day system," which has been in operation for several years, requires the attendance of the pupil but

one-half of each day, provided he has faithfully performed his duties. It is thought that this system has a good influence upon the *character* of the pupil, as it increases his self-reliance, and cultivates a feeling of responsibility; upon his *health*, also, during the time in which he is preparing his lessons he escapes the necessary restraint of the school-room and its vitiated atmosphere, and upon his *mind*, as undisturbed by the distracting influences that are unavoidable in a large school, he can accomplish much more in the same time, and with much more satisfaction. It is an economical arrangement, also. Says the Superintendent: "The present High School-house was intended to accommodate nine hundred pupils. With this system it will accommodate just twice that number." (One half attending in the morning, and the other half in the afternoon) "Hence it is to-day saving an expenditure of from twenty to thirty thousand dollars in the erection of a new High School building."

The results of this system are so entirely satisfactory to all parties interested, and its advantages so obvious, that I would commend it for adoption in those towns whose citizens are not prepared to incur the expense of erecting new High School buildings, or of enlarging existing ones, to accommodate the increasing number of pupils prepared to enter upon the High School course of study.

COMMON SCHOOL STUDIES.

There is an opinion very prevalent among educators that while our schools are doing a great and noble work, they are not accomplishing all that might reasonably be expected of them, and to that opinion I am constrained to concur. In very many schools that I visit, I am pained to witness the attempt to memorize the endless and senseless details of geography and of history, the technicalities of grammar, at an age when they cannot be understood, and long examples in mental arithmetic, which with their complicated solutions must be given with closed book, and in precise, logical terms. If a portion of the time thus wasted, and worse than wasted, could be given to some studies that would really interest the children, develop their perceptive powers, accustom them to the correct use of language, and be of real practical value to them in after life, how much more satisfactory results would be exhibited at the close of the child's school life.

le has well expressed the feeling of regret which is very
ly entertained by those whose early education was similar
deficiencies to his. "For many years," he says, "it has
me of my constant regrets that no school master of mine
knowledge of natural history so far, at least, as to have
me the grasses that grow by the wayside, and the little
and wingless neighbors that are continually meeting me
salutation I cannot answer, as things are. Why didn't
ly teach me the constellations, too, and make me at home
starry heavens which are always overhead, and which I
half know to this day?" With teachers properly trained
r work, with better methods and a more systematic order
ing, with a judicious elimination of all that is useless or
real value from some of the studies now occupying an
proportion of time, with a regular and progressive course
ies, pursued in a natural and logical order, and adapted to
cessive ages of pupils, and with a proper economy of time,
y can all the present subjects of study in our schools be
d with more satisfactory results than at present, but very
more can be accomplished within the same period of school
l thus shall we better meet the reasonable demands of the

subject is an interesting and important one, but the further
on of it, in a brief report like this, cannot be pursued.
ent introduction of Hooker's admirable "Child's Book of
' into the Grammar Schools of Boston, Cambridge, Worces-
several other cities and towns, seems to me a step in the
rection towards a "consummation devoutly to be wished"
ect to an improved course of studies for our Common
, to which I must so briefly allude.

to educate our children, and secure the best results with
test economy of time and expense, is the great problem of
, and demands the best thoughts of all our educators.
very far from having perfected our school system, which,
many excellences, has also many obvious imperfections;
le we should avoid the beautiful but impracticable theo-
would-be reformers, we should be ready to adopt and en-
on our system any and every suggestion that will tend to
it more perfect, let it come from what source it may.
ll, in imitation of our fathers, to whom we are indebted

for the inception and establishment of this noble system, should, in all our efforts to improve it, humbly and constantly seek for that divine guidance and wisdom without which all man endeavors must prove ineffectual.

ABNER J. PHIPPS,
General Agent

Boston, January, 1872.

THIRTY-FIFTH ANNUAL REPORT

OF THE

SECRETARY OF THE BOARD.

SECRETARY'S REPORT.

Gentlemen of the Board of Education :—

I respectfully present for your consideration my Eleventh Annual Report as your Secretary, and invite your attention to the suggestions which I deem it advisable to make upon a few of the topics which have engaged my attention during the past year. Before entering upon these, I present the usual

SUMMARY OF STATISTICS FOR 1870-71.

Number of cities and towns,	34
All have made returns except Chelsea, and three towns newly incorporated—Ayer, Gay Head and Maynard.	
Number of Public Schools,	5,071
Increase for the year,	113
Number of persons in the State between five and fifteen years of age, May 1, 1870,	273,291
Increase for the year,	7,197
Number of scholars of all ages in all the Public Schools during the year,	273,611
Increase for the year,	*26,581
Average attendance in all the Public Schools during the year,	201,741
Increase for the year,	2,087
Ratio of average attendance for the year to the whole number of persons between five and fifteen, expressed in decimals, . . . . .	.73
Number of children under five attending Public Schools,	2,711
Decrease for the year,	180
Number of persons over fifteen attending Public Schools,	21,971
Decrease for the year,	178

* The number too large, through incorrect returns of school committees. They were requested former years to return the whole number of different scholars attending school in Summer, also Winter, in separate statements; but in the last Blank Form of Inquiries they were desired, according the universal practice in other States, to return the whole number of different scholars during the school-year, in one amount, without distinction of seasons or terms. The result was that in some towns the whole number of different scholars in one term was added to the whole number in the second and perhaps third term, thus returning a number too large, by counting the same scholar more than once, for the year. This mistake was perceived, and there was much correspondence to correct it; but in many cases it was difficult to detect the error with certainty, or ascertain the extent of it, and quite impracticable fully to correct it. Hence the return of an increase which is too large.

of different persons employed as teachers of Public schools during the year; males, 1,049; females, 7,186; total,	8,235
Decrease of males, 9; increase of females, 138; total increase,	*129
length of Public Schools,	8 months 9 days.
Increase for the year,	8 days.
average wages of male teachers (including High School teach- ers) per month,	\$76 44
average wages of female teachers per month,	81 67
amount raised by taxes for the support of Public Schools, includ- ing wages, fuel, care of fires and school-rooms,	8,272,885 38
Increase for the year,	\$147,282 24
amount of funds appropriated for Public Schools at the option of the towns, as surplus revenue and dog tax,	6,240 68
county contributions to prolong Public Schools, or to purchase land, etc.,	12,540 26
Decrease for the year,	\$6,457 64
amount of local school funds, the income of which can be ap- propriated only for the support of schools and academies,	1,167,173 27
amount of the local school funds appropriated for schools and academies,	75,808 48
amount of the State School Fund paid to the cities and towns in the Public Schools for the school-year 1870-71,	107,806 62
amount paid for superintendence of schools by school commit- tees and for printing school reports,	88,060 96
amount of salaries paid to superintendents of Public Schools,	89,026 50
amount returned as expended on Public Schools alone, ex- clusive of expense of repairing and erecting school-houses, and school books,	3,520,510 35
Increase for the year,	\$215,598 13
amount raised by taxes (including income of surplus revenue and similar funds, \$6,240.68,) exclusive of taxes for school edi- fices and superintendence, for the education of each child in the State between 5 and 15 years of age—per child,	11.78.8
Increase for the year,	\$0.28.4
percentage of the valuation of 1865 appropriated for Public schools, including only wages of teachers, fuel, and care of fires and school-rooms (8 mills and 25 hundredths,)	0.008-25
Increase for the year,	\$0.000-15
number of towns in the State have raised by tax the amount re- quired by law, (\$3 for each person between five and fifteen), in condition of receiving a share of the income of the State School Fund, except Gay Head,	
number of High Schools returned as such in towns not required by law to maintain them,	59

In the last annual report, page 104, it was incorrectly stated that there was a decrease in the num-
ber of schools from 1869-70 to 1870-71; there was an increase of 866 in ten years.

Number of High Schools in towns and cities having 500 families and required by law to maintain such schools,

Only three towns required by law failed to maintain a High School.

Evening Schools—number, 51; average attendance, 3,479; expense, \$36,760.65.

Schools in State Charitable and Reformatory Institutions—number, 20; teachers, 30; number of different pupils, 1,581; average attendance, 898; number between five and fifteen, 573; number over fifteen, 413; expense, \$9,576.40.

Number of incorporated Academies returned,

Average number of scholars,

Increase for the year, 54

Amount paid for tuition, \$115,13

Increase for the year, \$3,268 86

Number of Private Schools and Academies,

Decrease for the year, 38

Estimated average attendance, 1

Decrease for the year, 1,473

Estimated amount of tuition paid, \$406,43

Decrease for the year, \$73,248 83

Amount expended in 1870 for erecting school-houses, 1,712,07

Increase for the year, \$258,766 83

Amount expended for repairing school-houses, 346,77

Increase for the year, \$31,367 59

Total expended for school-houses in 1870, 2,058,85

Amount of *taxes* paid to maintain Public Schools alone, exclusive of cost of school books,—for wages, fuel, care of fires and school-rooms, repairing and erecting school-houses, supervising schools, printing school reports, providing apparatus, instruction of children in reformatory institutions and almshouses, 5,462,85

—or for each person in the State between five and fifteen years of age, 1

—or for each man, woman and child in the State,

—or a percentage on the valuation of 1865 of over 5

Amount paid for popular instruction of children and youth in the State, derived from taxes, voluntary contributions, income of funds, tuition in Private Schools and Academies, exclusive of what is expended for collegiate and professional education and for school books, 6,297,01

—or for each person between five and fifteen years of age, 2

—or for each person of the entire population,

—or a percentage on the valuation of 1865 of over 6

DEAF MUTE EDUCATION.

obedience to the requirement of the statute there will be in connection with the report of the Board the full report of the Clarke Institution; the fifty-fifth report of the Directors of the American Asylum, relating principally to the lamented death of Wm. Collins Stone, the late accomplished Principal, with extracts from the first annual report of the present Principal, and the names of the pupils supported by the Commonwealth in the year 1871; and a report of the chairman of the committee having charge of the Boston School for Deaf Mutes, with the names of the pupils therein who are aided by the State.

Following these reports will be found a statement of the sums appropriated from the State treasury to each of the schools for the year ending January 1, 1872.

During the last year application was made for the admission to the American Asylum of two young men nearly twenty years old, who had been suffered to grow up in ignorance to that period of their lives in one of our most populous towns, and in the immediate neighborhood of a large city. I am impelled by witnessing such a case to renewedly urge upon the school committees and all others interested in the welfare of the communities where they live, and of the whole Commonwealth, the exercise of such vigilance as shall gather all of this class of pupils into the schools established to receive them. The Commonwealth is desirous of furnishing all needed assistance to accomplish this most desirable end; and it is deeply to be regretted that any should fail of receiving an education through indifference or neglect on the part of friends and school officers.

TEACHERS' INSTITUTES.

Teachers' Institutes were held during the autumn, one of which, being on the week of the annual election was continued three days. The remaining six were continued the usual number of five days. In each, twenty-seven teaching exercises were given by the teachers, and five evening lectures, most of them being accompanied by historical exercises given by Professor Monroe. The Institutes were held in the following towns and counties: in Pittsfield, Berkshire County; Sandwich and Wellfleet in Barnstable

County ; West Newbury in Essex County ; Ayer and Marlboro in Middlesex County ; Medway in Norfolk County.

Most of these were marked by an unusually large attendance of intelligent teachers, earnest in their endeavors to secure the highest possible aid from the instructions and counsels of the Board, and the evening lectures were listened to by crowded audiences, thus evincing the deep interest which everywhere pervades the minds of our population in the cause of public education.

I respectfully refer to the valuable report of Mr. Phipps, General Agent of the Board, for a more full account of the Institutes, to whose unwearied and judicious efforts their success is in a large degree owing.

So long as the ancient custom generally prevailed of dividing the school year into two terms, held in midsummer and winter, it was possible so to arrange the times of holding the Institutes as to cause but little interference with the schools in actual session. Now, however, that a more rational division of the school-year by which three terms instead of two are held, extensively prevails, the Institutes must be generally held during term time ; and school committees are very often embarrassed by the question as to the propriety of allowing the teachers to attend the Institutes in term time. This is more especially the case in those towns where no more money is raised than is sufficient to continue the schools for the bare time required by the statute. It thus not unfrequently happens that those teachers who need the instructions which the Institutes give, and who are desirous of availing themselves of them, are cut off from the privilege.

In several of the States,—New York, for instance, where Institutes are annually held in each county,—the Common School teachers are required by law to attend them, as one of the conditions of receiving a certificate of qualification to teach.

While I would not care to introduce this feature into our system until other important modifications are made, but rather to leave the attendance upon the Institutes to the good sense and voluntary action of school committees and teachers, I would remove, so far as possible, the obstacles in the way of such action. I therefore recommend, that the legislature be requested to pass an Act which shall give the school committee of any town

ty to allow the teachers in their employ to close their schools and upon any Institute held in term time, and in their to the Secretary of the Board to make no deductions for e thus employed.

NORMAL SCHOOLS.

e most important institutions have been conducted during year with all their accustomed faithfulness and success on of both teachers and pupils. In each of the schools a number have entered upon the advanced course of study ch provision has been made by the Board. In two of ools, many during the first year have determined to the full course of four years, and their studies are arranged ference to that, while in the others the advanced class is p of those who have graduated, and in many instances en engaged in teaching. Experience only will prove which methods will secure the most satisfactory results.

most notable events of the year have been the completion enlargements of the school buildings at Salem and Bridge- and the preliminary steps taken for the establishment of Normal School at Worcester.

work of enlarging and remodeling the Salem building was t the close of the summer term of 1870, and completed at e of the corresponding term of 1871. Meanwhile the as kindly allowed by the city authorities to occupy that of the adjoining building which had been occupied by the hool. As remodeled, the Normal School building is amply d with rooms for recitations, lectures, cabinets of natural and fine library and reading-room. There is also a beautiful oom, with ample space for seating two hundred pupils. iding is one of fine proportions, and admirably adapted to eses, worthy alike of the Commonwealth and of the ancient re it is situated, which has contributed liberally towards ion and enlargement. The cost of the recent improve- esides the land which was given by the city of Salem, has 5,578.75.

e 12th of May last an appropriation of \$15,000 was made. egislature for "the enlargement and reconstruction of the School building at Bridgewater and for furnishing the Plans were procured and contracts made, so that the

work was commenced at the close of the summer term. By giving a single week to the summer vacation of eight weeks, deducting the time from the winter vacation, the work was completed without any loss of time to the school. The enlargement consists mainly in giving an additional story to the building and raising the roof. In this story the large hall is constructed as a room for study and general exercises; while commodious and pleasant recitation, lecture and library rooms are finished in the other stories, and the whole building is furnished with an effective apparatus for heating and ventilation.

The alterations were skilfully planned and executed at a cost not exceeding the appropriation, and the completed building is altogether a commodious and satisfactory one.

It is but just to say, with respect to both the Salem and Bridgewater buildings, that great credit is due to Mr. Hagar and Mr. Boyden for devising and procuring the admirable plan of the work at these several schools, and for assiduously overseeing the execution of them.

The plan, which has been long entertained and steadily pursued, of enlarging the capacity of the Normal Schools, so as to enable them better to supply the wants of the community, has now been completed so far as the school buildings are concerned. It only remains for the legislature to respond to the urgent request of the Board and furnish the means of cheaper boarding, and of books, apparatus and other appliances as are indispensable for thorough teaching in order that these schools may continue to do what they were designed by their enlightened founders to do, as the most powerful and beneficent agencies in our educational system.

On this subject I beg leave to refer to the opinions expressed in my last report, with the single remark, that every day's observation and experience in the great service to which you have called me, have served only to deepen and strengthen my convictions of the importance of the convictions there expressed.

NEW NORMAL SCHOOL.

In their report for 1869, the Board recommended the establishment of a new Normal School in the county of Worcester. The recommendation was renewed in the report for 1870. In response to these, and to petitions from several towns in the county, the legislature, at the last session, passed the following resolves:—

CHAP. 79.

RESOLVES to establish a Normal School in Worcester.

Resolved, That the board of education are hereby authorized and required to establish a state normal school in the city of Worcester, and that the sum of sixty thousand dollars is hereby appropriated to defray the expenses of erecting a suitable building and furnishing the necessary appurtenances and apparatus for said school, and that the same be expended under the direction of the board of education, upon whose requisition the governor is hereby authorized to draw his warrant for the amount aforesaid to be paid from the school fund: *provided*, that the deficit of income of the school fund occasioned by such payment shall be deducted from the balance of the income of said fund applicable to educational purposes, in the same manner as not to affect the amount to be apportioned and distributed for the support of public schools.

Resolved, That the trustees of the Worcester Lunatic Hospital are authorized and required to convey to the board of education and their successors, in trust for the Commonwealth, a tract of land situated in said city of Worcester of not more than five acres, to be bounded by the governor and council, east of a line drawn one hundred and twenty feet east of the easterly line of Mulberry Street, and south of a line drawn five hundred feet south of the southerly line of Prospect Street, when extended east as proposed; and west of the easterly line of Wilmot Street, when extended southerly as proposed; and the conveyance of said land to include a right of way thereto from Prospect Street, the location whereof shall be determined and approved by the governor and council, if, in their opinion, said right of way is necessary and desirable.

Resolved, That the city of Worcester is hereby authorized to lay out and extend Prospect Street, from its present easterly terminus to its intersection with the proposed line of the prolongation of Wilmot Street, and also to extend Wilmot Street southerly to the proposed intersection with the extension of Prospect Street, and from that point easterly to East Central Street.

Resolved, That the value of said land shall be determined and approved by the governor and council, and the amount shall be credited to the treasurer of the Commonwealth to the fund created by the provisions of section four of chapter two hundred and thirty-eight of the acts of the year eighteen hundred and seventy.

Resolved, That the city council of the city of Worcester may raise a tax or otherwise, the sum of fifteen thousand dollars, and may apply the same to the board of education for the purposes named in these resolves: *provided*, that these resolves shall not take effect until the city of Worcester or the inhabitants thereof shall have paid to the

board of education the sum of fifteen thousand dollars to aid in erection and furnishing of the building for said school. [*App May 26, 1871.*]

The city of Worcester having complied with the conditions required in said resolves, the governor and council proceeded in the month of September to locate five acres of land, including a strip of way thereto of one hundred feet in width, and to determine the value of the land which was fixed at \$25,000 to be credited to the Commonwealth to the Worcester Lunatic Hospital Fund. The proper conveyances of the land thereupon were made by the trustees of the Hospital.

At the quarterly meeting on the first Wednesday of October the Board appointed a Building Committee consisting of Mr. Chapin, Rice, Philbrick and the Secretary, with instructions to procure suitable plans for a building, and power to employ an architect. A. R. Esty, Esq., of Framingham, an architect of known ability, and having much experience in the construction of public buildings, and who had constructed the Normal School building and boarding-house at Framingham, was employed to prepare, for the consideration of the Board, a plan for a building with proper accommodations for a school of two hundred pupils.

The plan devised by Mr. Esty proving eminently satisfactory both to the committee and the Board, the committee were authorized to cause full specifications to be made, and to place the building under contract. I am happy to say that this has been done. Skilful and responsible parties have entered into contract to construct the edifice at prices which will bring the cost of the building and the furnishing of it within the means placed at the disposal of the Board.

The material will be stone taken from a neighboring quarry with facings of Concord granite, and it is expected that the building will be completed and ready for the fifth Normal School of the Commonwealth, at the opening of the fall term of 1878.

It is a matter of sincere congratulation not only by the Board but also by the friends of Public Schools throughout the Commonwealth, that this important step has been taken—the first after an interval of eighteen years since the establishment of the State Normal School—and that the new school is to have a home in a city so central, so accessible by numerous railways, and so di-

for the enlightened zeal and munificence ever displayed by the citizens in behalf of its Public Schools. Nor can I doubt the wisdom of the policy, first adopted in this country by Massachusetts, of providing, at the public expense, for the thorough professional training of the teachers of her Public Schools, now happily *revived*, will not be suffered again to slumber so long as that other schools of a like character will be freely maintained, as the wants of the Public Schools and of particular towns shall demand.

I join a statement of the cost of the several Normal School buildings, with fixtures, &c., and their present value by the following table.

Framingham Normal School-House.

First cost :

Paid by the State,	\$11,000 00	
Town of Framingham,	2,500 00	
Boston and Worcester Railroad,	2,000 00	
	<hr/>	\$15,500 00

Enlargement :

Appropriations,	\$12,483 00	
Appropriations for land,	1,200 00	
	<hr/>	13,683 00

Total cost,	\$29,183 00
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Boarding-House :

Loan from School Fund,	\$26,500 00	
Appropriation,	4,654 00	
	<hr/>	31,154 00

Total cost of school-house and boarding-house and fixtures,	\$60,287 00
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Estimated present value :

Value of land,	\$6,000 00	
School building,	25,000 00	
Boarding-house and fixtures,	29,000 00	
Land and apparatus,	1,500 00	
	<hr/>	\$61,500 00

In addition to the contributions of \$4,500 by the town and railroads towards the first cost of the school building, the lot upon

which it stands, comprising four and three-fourths acres of able land was given by public-spirited individuals.

Westfield School Building.

First cost of building and lot, 1846,	.	.	.	\$11,5
First alteration, 1856,	.	.	.	\$5,000 00
Second alteration, wings added, 1860,	.	.	.	6,000 00
Third alteration, third story added, 1869,	.	.	.	15,000 00
Fencing, etc.,	.	.	.	2,000 00
				<hr/>
				\$28,0
Apparatus,	.	.	.	\$1,000 00
Furniture,	.	.	.	2,000 00
				<hr/>
				3,0
Total,	.	.	.	<hr/>
				\$42,5

Estimated present value:

Land,	.	.	.	\$10,000 00
School building and fixtures,	.	.	.	45,000 00
Apparatus,	.	.	.	1,000 00
Cabinets and library,	.	.	.	3,500 00
				<hr/>
				\$59,5

The cabinets of Natural History and the Library, valued at \$3,500, have cost the Commonwealth nothing.

Bridgewater School-House.

First cost of building and lot:

1846-7. Paid by State,	.	.	.	\$3,750 00
Paid by the town and individuals,	.	.	.	2,600 00
				<hr/>
				\$6,3

Additions:

1861. Appropriation, wings added,	.	.	.	\$4,500 00
1871. Appropriation, new story added,	.	.	.	15,000 00
Fixtures and cabinet cases,	.	.	.	1,000 00
				<hr/>
				20,5
Total,	.	.	.	<hr/>
				\$26,8

Boarding-house:

1869-70. Loans from the school fund,	.	.	.	\$26,500 00
Individuals, for cistern, tank, etc.,	.	.	.	500 00
				<hr/>
				27,0
Total,	.	.	.	<hr/>
				\$53,8

Estimated present value:

.	\$1,500 00	
l-house,	30,000 00	
atus,	1,800 00	
y and cabinets,	2,750 00	
	<hr/>	\$85,550 00
ing-house, fixtures and furniture,	27,000 00	
	<hr/>	\$62,550 00
total,		

vious to the erection of the school-house in 1846-7, the town
 idgewater and individuals expended in fitting up the town
 for the use of the school, in providing a house for a Model
 l, in the payment of rents and in cash for the support of
 hool, the sum of \$1,720.

Salem Normal School Building.

First cost:

Paid by the State,	\$6,000 00	
Eastern Railroad,	2,000 00	
City of Salem,	5,500 00	
	<hr/>	\$13,500 00
ty gave also the land, valued at	5,000 00	
	<hr/>	\$18,500 00
total,		

Appropriation for furnishing, etc.,	\$2,000 00	
Appropriation for alterations,	1,000 00	
Individual gift, alterations,	1,000 00	
	<hr/>	4,000 00

1. Appropriation for enlargement,	\$25,000 00	
Land given by Salem, value,	1,000 00	
	<hr/>	26,000 00
f fixtures, and furniture and apparatus,	2,700 00	
	<hr/>	\$51,200 00
total,		

Estimated present value:

ng,	\$50,000 00	
.	6,000 00	
and other fixtures,	1,000 00	
atus,	500 00	
et of Natural History,	500 00	
y, general and text-book,	7,000 00	
	<hr/>	\$65,000 00

In stating the *cost* of the school property, no account has been taken of cabinets and libraries, from the fact that they have been collected with little or no expense to the Commonwealth. The books are largely gifts from individuals; the specimens of Natural History are in like manner gifts to the schools, or have been collected by the teachers and pupils.

No separate statement has been made of the cost of furniture, inasmuch as it is more frequently than otherwise included in the cost of the buildings.

SUPERVISION OF SCHOOLS.

Our system of supervision by a committee, more or less numerous, chosen by the town, is an outgrowth of the ancient and honorable custom of committing the conduct of general town affairs to an analogous body known as selectmen. In some of the other States, as in New York, for instance, the general town affairs are given to a single officer known as supervisor, and in like manner the schools are under the supervision of one person. In that State the present method of supervision is regarded as greatly superior to that which divides responsibility among a considerable number, so that a little responsibility is felt by anybody. Looking at them in the abstract, doubtless each system will be seen to have its peculiar advantages; but practically that will be the best which most nearly conforms to the habits of the people. Hence our own system will not very soon be changed. Moreover, the laws of 1854 and 1855, which authorize any city or town to *require* its school committee to appoint a superintendent, furnish the means of securing the advantages of both systems, that of a larger body for counsel and of a single person for details. I need not repeat the reasons which I have heretofore urged in favor of employing a competent superintendent to have the immediate oversight of the schools of town or city. I am happy to learn from the annual reports that the practice is gradually finding favor. I herewith a list of between forty and fifty towns in which an officer is employed, as appears by the latest reports received at this office. In most cases the office has become a permanent one, with a respectable salary, and commands the services of men of large experience and eminent ability. In many cases one member of the school committee who has aptitude for the work and leisure, is intrusted with the entire active management.

a committee, often performing them for small compensation. In the case of contiguous towns, where the proper remuneration of a superintendent would be a serious burden on a single town, a recent law provides that the towns may unite in the employment of such an officer. I commend this law to the consideration of the towns in which the desire is felt for a more thorough supervision of their schools than that by an ordinary committee.

A few years since I was gratified to notice the election of a woman as a member of the school committee of one of our rural towns. Soon a bill was reported in the house of representatives authorizing the election of females on the school committee. The bill was defeated on the ground that the law was unnecessary, inasmuch as the towns had full power under existing laws. Since then the number of such elections has quite rapidly increased; and it may interest some to learn that, in two of the towns named below, the schools are under the supervision of

women. I need not spend time in enumerating the reasons which might be supposed to have dictated such a course.

The fact that seven-eighths of our Public Schools are taught by females, and that in many of our towns there are far larger numbers of educated females than males, ladies who have graduated at the Normal School or Academy, and have spent many years in teaching, with nothing of tact, and sympathy, and the necessary leisure afforded by many, are reasons sufficient for the movement, which, if not stopped, will continue till, both as members of committees and as superintendents, women will exert an influence alike powerful and beneficent.

Towns which are reported as employing Superintendents of schools:—

Andover.	Blandford.	Stow.
Andover.	Holyoke.	Woburn.
Andover.	Springfield.	Canton.
Andover.	Amherst.	Dover.
Andover.	Northampton.	Kingston.
Andover.	Acton.	Marion.
Andover.	Arlington.	Plymouth.
Andover.	Ashby.	Scituate.
Andover.	Boxborough.	West Bridgewater.

Taunton.	Cambridge.	Boston.
Beverly.	Charlestown.	Athol.
Gloucester.	Chelmsford.	Douglas.
Lawrence.	Concord.	Holden.
Salem.	Lowell.	Mendon.
Topsfield.	Newton.	Worcester.
Hawley.	Somerville.	

SPECIAL AGENTS.

At the last session the legislature at the request of the Board made an appropriation from the income of the school fund of a sum not exceeding ten thousand dollars, in addition to the amount appropriated for the salary of Mr. Phipps, the General Agent, to be expended for the salaries and expenses of such special agents as the Board might employ.

The object of this appropriation was twofold:—

First, to enable the Board to secure if practicable the services of some competent agent to give aid and direction in a more systematic and thorough course of Art instruction in the Normal Schools; to visit the cities and towns required by the law of 1870 to maintain classes for the instruction in mechanical drawing; to give information and assistance to school committees in the formation of such classes, and the arrangement of suitable courses of instruction in them; and, lastly, to devise and aid in giving effect to some practical method for the education of teachers in drawing, who shall be capable of giving instruction in the special schools and also in the Common Schools.

The second object was the employment of such a number of competent persons as the appropriation would allow, to act as visiting agents within certain districts to be designated, who should perform the service in their respective districts which is performed by the General Agent, with the intent of so supplementing his labor that all the towns in the Commonwealth should be visited by an authorized agent of the Board at least once annually, who being located within their respective districts should be able to answer promptly special calls for advice and assistance whenever made. It was hoped in this way to make some approach towards or provide a substitute for that more intimate and thorough system of inspection and supervision which prevails in most of the States of the Union in the form of county superintendents, occupying

those States an intermediate position between that of the State superintendent and the town superintendent or committee.

Having in a former report expressed the opinion that some system of intermediate supervision, either that of county superintendents or district agents, is indispensable to the successful working of our school system, I need not repeat what I then said, and will only remark further, that I regarded the extra appropriation with deep interest as a first step in the road of progress in the right direction.

The fact appearing, however, that other appropriations would nearly absorb that portion of the income of the school fund to which all were charged, it was not judged wise to attempt much in this direction. Late in the year, a single agent, Geo. A. Walton, Esq., was employed to visit the towns west of the Connecticut River during the winter months, his engagement terminating on the first of April. Mr. Walton commenced his labors soon after the Teachers' Institute in December, and has been actively and successfully engaged in his new field.

With regard to the first mentioned object for which the appropriation was asked, more has been accomplished.

Early in the year the sub-committee to whom the school committee of Boston had committed the subject of Art Education, opened a correspondence with gentlemen in England, with the object of procuring a gentleman having the requisite qualifications to organize classes and conduct the department of Drawing in the Boston schools, on the same general plan that music is so successfully taught in them.

The correspondence resulted in an invitation to Walter Smith, Esq., the head master of the School of Art in Leeds, to accept the position. In June last Mr. Smith visited this country with the view of examining the ground personally before deciding the question of removal. Mr. Smith brought the most ample proofs, not only of distinguished ability as an educator in his favorite department, but also, of having been equally distinguished for his skilful and successful endeavors in organizing schools of art in numerous cities in England, a branch of service second in importance to no other with us.

After a full conference with Mr. Smith by the executive committee of the Board, in which he fully explained his views as to the best methods of organizing and carrying forward the work in

hand, the committee were satisfied of the expediency of procuring his services for the Commonwealth for such portion of his time as should be agreed upon with the Boston committee.

The agreement was made, subject to the approval of the Board, to pay two-fifths of Mr. Smith's salary, and his actual travel expenses, for a like proportion of his time to be spent in the service of the Commonwealth.

Having accepted the joint service thus tendered to him, Mr. Smith returned to England and made immediate dispositions for his final departure. He was also charged with the duty of procuring such models of art, drawings, casts, etc., as would be needed for use in his visits to the cities and towns, and in the Normal Schools. For this purpose he was authorized to expend five hundred dollars, which was appropriated by the Board from the income of the Todd Fund.

Having procured by purchase, and by the gift of generous friends of art culture in England, a valuable collection of models, etc., suited to his purpose, Mr. Smith returned to Massachusetts early in the autumn and commenced his work. He gave interesting lectures and teaching exercises in the Teachers' Institute, and has since been engaged in visiting and giving instruction in those cities and towns required by the statute of 1870 to maintain adult classes in mechanical drawing. In this service he is greatly aided by the collection of models above named. These have been labelled and catalogued, and, to secure safety and convenience in their transportation and arrangement for use, are placed under the charge of a curator, who is a competent teacher of drawing, and in this way also does good service in supplementing the labors of Mr. Smith.

At the annual meeting of the Massachusetts Teachers' Association in October last, Mr. Smith delivered a very interesting and valuable address on "*Art Education, and the teaching of Drawing in the Public Schools.*" This address was listened to with profound interest by a large body of the leading teachers from every section of the Commonwealth, and was published in the "*Massachusetts Teacher*" for November. It has also been printed by the Board in pamphlet form, and with it two valuable papers by Prof. Thompson, which were printed by the Board in 1870.

In November a circular was issued by the Secretary of the

Board, and sent to the school committee of each town and city in the Commonwealth, announcing the entrance of Mr. Smith upon his duties as State Director of Art Education and giving information as to his methods of procedure, and the means of securing his personal aid and advice in all matters pertaining to his department.

This address and circular will be found in the Appendix to this Report, to which reference is respectfully invited.

It has given me great pleasure to learn that the teaching exercises and more popular lectures of the Art Director are everywhere received with a high degree of approbation. New interest is awakened and large numbers are flocking to the classes wherever they are established. Flourishing classes have been formed in all but two or three of the towns and cities which are required by law to establish them. The chief obstacle in the way of forming these classes lies in the difficulty of procuring competent teachers. So fast as this obstacle can be removed I see no good reason why the law should not be extended in its scope so as to embrace all our towns having more than five thousand inhabitants. In addition to the work already alluded to, the "objective point" of the efforts of the Board and of the Art Director will doubtless be the preparation, as rapidly as possible, of competent teachers, both for the Public Schools and for special classes. To this end it will be the duty of Mr. Smith, as soon as he can be released from the more immediate calls of the towns while the evening classes are in session, to spend as much effort as possible in the Normal Schools, with the view of giving the utmost efficiency to the instruction in drawing given in them; for on these schools we must mainly rely for efficient aid in its general introduction as a branch of study into the Common Schools.

Something can be done, as heretofore, in the Teachers' Institutes. Still more, however, might be expected from special normal classes, to be opened at central points, at such periods of the year as would best accommodate the teachers of the vicinity. A special appropriation to be used by the Board in maintaining such classes to a limited extent for the purpose of experiment, at least, would be of signal advantage.

And here it gives me pleasure to point to an experiment in proof of the feasibility of establishing such special classes. In July last, in response to a circular* issued by Mr. Marble, Superintendent

* For the Circular, see Appendix.

of Public Instruction in Worcester, a normal class of twenty-three was opened in the rooms of the Worcester Free Institute, and taught by the professors of the Institute, for three weeks, two lessons each day. The pupils paid a fee of ten dollars each for tuition, the use of the rooms being generously granted by the trustees free of charge.

Professor Thompson, of the Worcester Free Institute, says, in a note to myself: "The class is not as large as it would have been at any time except just at the close of the (school) year, in hot weather, when most people rest and travel. That the class was as large as it was argues the need of it." If, as was the case in founding the Normal Schools, wealthy citizens or manufacturing corporations would make liberal appropriations, to be supplemented by the State, for the establishment of schools for instruction in Art and its applications to the industries pursued by them, such an impulse could not fail to be given to the work so auspiciously begun as would insure the emancipation of these industries from their present dependence on foreign artisans, and at the same time, by the coöperation of the State, and in connection with the other instrumentalities which I have named, furnish an ample supply of teachers to meet the demand of the Commonwealth.

It is the view which I have of the vital relations of this subject, alike with a true progress in general education and the higher success in our industrial pursuits, which has led me to describe so much in detail the steps taken during the past year, and which impels me to express the hope that having "put the hand to the plough" we shall not look back till something has been accomplished worthy of the importance of the subject, and of the acknowledged sagacity and intelligence for which the public acts of the Commonwealth are so generally distinguished.

SCHOOL FUND.

I give herewith the annual report of the Commissioners of the Fund to the legislature, which shows the transactions of the fund during the year 1871, the amount of the principal January 1, 1872, and the income for the year then closing:—

To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.

The undersigned, Commissioners of the Massachusetts School Fund, in compliance with the 53d chapter of the Acts of 1866, have the honor to submit the following Report of the condition and amount of said fund January 1, 1872, together with the receipts and payments during the year 1871:—

The amount of the Fund, January 1, 1871, was	\$2,211,410 77
Received for premium on coin payment of \$500 from the town of Provincetown,	\$54 37
for premium on coin payment of \$124,000 from the city of Portland,	13,950 00
premium on coin payment of \$50,000 from State of Massachusetts	6,500 00
from Treasurer Board of Education, unex- pended appropriation for Teachers' In- stitutes,	1,451 84
	<hr/> 21,956 21

Total Fund, January 1, 1872, \$2,283,366 98

The fund is invested as follows:—

Boston & Albany Railroad stock (10,787 shares), .	\$1,095,235 75
United States 5-20 bonds, 6 per cent.,	30,000 00
State of Maine bonds, 6 per cent.,	9,600 00
bonds, 5 per cent.,	25,000 00
Massachusetts Almshouse bonds, 1853, 5 per cent., .	39,000 00
Hospital and St. P. bonds, 1854, 5 per cent,	17,000 00
Massachusetts State House bonds, 1854, 5 per cent.,	18,000 00
Troy & Greenfield R. R. bonds, 5 per cent,	311,000 00
Back Bay Lands bonds, 5 per cent,	38,000 00
Union Loan bonds, 5 per cent.,	20,000 00
War bonds, 6 per cent.,	103,000 00
Town of Provincetown, note, 6 per cent,	2,600 00
of Plymouth, notes, 6 per cent,	12,500 00
of Needham, notes, 6½ per cent.,	10,000 00
of Hopkinton, note, 6½ per cent.,	6,000 00
of Newton, notes, 5 and 6 per cent.,	78,000 00
of North Chelsea, notes, 5 per cent.,	6,000 00
of Clinton, note, 6 per cent,	4,500 00
City of Roxbury, note, 5½ per cent.,	20,000 00

Amount carried forward, \$1,845,435 75

<i>Amount brought forward,</i>	\$1,845,435 75
Town of Brookline, notes, 6 per cent.,	14,000 00
of Westborough, notes, 6 per cent.,	7,000 00
of Dana, notes, 6½ per cent.,	6,700 00
of Orange, notes, 6½ per cent.,	25,000 00
of Beverly, notes, 6 per cent.,	30,000 00
of Quincy, note,	20,000 00
of Templeton, note,	10,000 00
of Reading, notes,	10,000 00
of Framingham, notes,	10,000 00
of Hopkinton, notes,	6,000 00
	<hr/> \$1,984,135 75

INCOME, 1871.

Whole amount received in interest and dividends,	\$177,496 46
One moiety thereof to be distributed to cities and towns,	88,748 23
	<hr/> \$88,748 23
One moiety to educational expenses,	\$88,748 23
Add balance of income for 1870,	26,757 23
	<hr/> \$115,505 46

PAYMENTS FOR EDUCATIONAL PURPOSES.

Secretary of the Board,	\$3,400 00
Travelling expenses of members,	140 50
Printing Report, &c,	10,000 00
Agents' salaries,	4,224 87
Incidentals of Board,	487 32
Support of Normal Schools,	37,427 78
Aid to pupils,	4,000 00
Teachers' Institutes,	3,000 00
County Teachers' Associations,	225 00
Massachusetts Teachers' Association,	800 00
Normal School Buildings,	35,209 65
American Institute of Instruction,	500 00
Interest to August 1, 1871, on money advanced from the fund, \$53,000,	4,745 95
Indian schools,	50 00
	<hr/> 104,211 07
Balance carried forward, account of 1872,	\$11,294 39

This balance of income is carried forward to meet the payment of salaries due to the Normal School teachers, January 1, 1872, which will quite absorb that sum.

JOSEPH WHITE,
CHARLES ADAMS, Jr.,
Commissioners.

BOSTON, January 20, 1872.

In my last report I gave a succinct account of the origin and history of this fund,—pointing out from the reports made at various times to the legislature, and the Acts passed thereupon, the purposes intended to be subserved in the creation of the fund, and the subsequent additions made to it; and showing that the whole course of legislation from the beginning up to a recent period was in harmony with, and in furtherance of, the broad and liberal views which guided in its original creation.

And that course of legislation which had produced the most beneficent results, was reversed in 1864, when a law was passed which diverted the net proceeds of the Back Bay enterprise from the school fund when it should reach the sum of \$2,000,000, to which said proceeds had been sacredly devoted, and using them for the extinction of debts contracted in the war, thereby and to the extent of the sums thus diverted, relieving from taxation the rich and rapidly growing sections of the Commonwealth at the expense of the poorer and less thrifty districts.

When the law was enacted, providing for the increase of the School Fund from the avails of the Back Bay enterprise, and it was also provided that one moiety of the income of the fund should be paid to the towns for the support of schools, the opinion prevailed that the increase of the fund would so keep pace with that of population that the amount to be divided would, for a long time to come, be a substantial aid, especially to those towns which greatly need it. It was in like manner believed that the moiety devoted to general educational purposes would not only be amply sufficient for all such purposes, but also leave a considerable annual surplus to be added to the principal of the fund.

But the repeal of this law has brought us face to face with another condition of things.

The principal of the fund has reached its maximum, having passed the limit contemplated by the legislation of 1864, only by the receipt of stock dividends issued by the Boston and Albany Railroad, which are not likely to be repeated.

The income, which was for the past year \$177,496.46, will not be greater in future years. The moiety to be divided among the towns is sufficient to give to each child, between five and fifteen years, thirty-two cents. This small pittance will, from the present year, be annually diminished, as population increases, until at no very distant day it will become so small as to render no appre-

cial aid to the towns, while in a large number of them, from other causes than the increase of their school population, the necessity for such aid is constantly becoming more and more pressing.

On the other hand, the reasonable requirements of the present year for the support of the existing Normal Schools, for the limited system of agencies of which I have already spoken, and for those ordinary operations of the Board and its Secretary which are required by law, more than equal in the aggregate the other moiety of income which is set apart for these and similar uses, reduced as that moiety is by the payment of interest on the sums expended and to be expended in the erection of Normal School buildings. Also, the new Normal School, at Worcester, will present its claims to the legislature of 1873, for an equal provision with the others.

Moreover, public opinion is unmistakably looking toward the adoption of a far more comprehensive system of means for the better education of teachers and more thorough supervision of the schools. It is seen that in these respects we are drifting behind the younger and vigorous States, and that there is serious danger that we shall rest satisfied with past achievements, until the contrast between our own progress and theirs will be an unpleasant subject to contemplate.

The demand, therefore, for larger means and a more perfect organization must soon be met. And can it be doubted that the people and their representatives will meet it with that wise liberality which has hitherto characterized the legislation of the Commonwealth?

With an educational system which embraces our five thousand schools, eight thousand teachers and two hundred and eighty thousand pupils, which is supported by an annual taxation of nearly \$3,500,000, and in whose successful working the long life of the Commonwealth is bound up, there need be no apprehension that any reasonable expenditures will be withheld which are necessary to keep a machinery so vast and so beneficent in vigorous and healthful play. The people will not be much longer restricted to the use of instrumentalities, which answered the demands of the time when they were called into being, thirty years ago; and which were then regarded only as the first steps towards a complete system.

While, with a generous hand, they open the doors of the public treasury, to the demands of our higher institutions, of science and liberal culture, they will not fail to make an equally generous provision for the just demands of the Public Schools, in which alone the vast majority of the children receive their only education.

HALF-MILL SCHOOL FUND.

I desire to invite your attention to a phase of our school system to which I have once or twice alluded briefly; but which, in my judgment, assumes such a degree of importance as to demand a more extended and careful consideration. I refer to the marked disparity in the burdens which it imposes upon the different cities and towns for its support, and the unequal benefits which it confers.

Through all the periods of our history, we have held fast to the maxim enunciated by the founders of the colony, in 1642, "that the good education of children is of singular behoof and benefit to any Commonwealth." This was the corner-stone of the great enactment, five years later, which founded the system of free schools.

The free school exists not solely, nor chiefly, for the individual persons, or separate members which compose it, but through these for the whole "body politic,"—the Commonwealth. Hence the right of the State, than which none is more sacred, and the duty of the State, than which none is more urgent, to provide free public instruction.

This may be done in three ways:—

1. By a general tax, levied equally upon the entire property of the State; as is the case in Indiana and one or two other States of the Union.

2. By taxation of the several towns and districts, to be determined as to the amount by the legal voters thereof; as is substantially the case with ourselves.

3. By the combined taxation of the State and the towns or districts, as in New York and the larger number of the States of the Union.

Ours is the second method mentioned. The attitude of the Commonwealth is that of command,—of force. She utters her

commands, with penalties annexed, to every city and town within her borders, to maintain schools, of such grades, in such number, and for such times as she deems best; determines the qualifications of the teachers; prescribes the *branches of study to be taught*, the mode of administration, and the means of securing attendance; and all this that she may secure the prevalence of intelligence throughout her borders, without which she could not exist an hour as a free and prosperous Commonwealth.

Obviously, this method of supporting a State system of schools is equitable only when the several municipalities occupy such a position in respect to population and wealth that the burden thus thrown upon one will press equally upon all.

Such was substantially the condition of things when our school system was originally established. In the homogeneous character of the people; in the similarity of their tastes, habits, modes of domestic life, and in the similarity of occupations (agriculture and the fisheries being the principal industries), were found the conditions of a substantial uniformity of "worldly fortune" throughout the several towns of the new and growing colony most favorable for the great experiment.

During the periods of our colonial, provincial and constitutional history until the close of the first quarter of the present century, these favorable conditions remained substantially the same.

But these conditions no longer exist; and the old method of supporting our schools has ceased to be equitable, and in many cases it has well nigh ceased to be practicable.

The introduction of the great branches of manufacturing industry which draw large masses of people to convenient centres; the vast increase of internal trade and of external commerce by means of our railroad system spreading like network over our territory, and all converging to a few central points, have silently, yet wonderfully, changed the old order and relations of our municipalities to each other. The population and wealth, once diffused with comparative equality, have in a large degree left the rural districts for the great centres of trade and industry.

In illustration and proof of this change, and to a certain degree of its extent, I invite attention to the following table, which gives,—first, the names of the counties, alphabetically arranged;

secondly, the valuation of each in 1871, as appears from the assessors' returns to the Secretary of the Commonwealth; thirdly, the number of persons in each between five and fifteen years of age; fourthly, the amount of county valuation which each of such persons represents; and, lastly, the valuation, &c., for the whole State.

COUNTIES.	Valuation, 1871.	No. of Children between 5 and 15.	Amount represented per Child.
Barnstable,	\$13,839,612 00	6,669	\$2,075 21
Berkshire,	38,746,155 00	13,085	2,961 11
Bristol,	86,241,440 00	19,979	4,316 60
Dukes,	2,331,883 00	762	3,060 21
Essex,	141,015,586 00	38,639	3,649 56
Franklin,	14,838,594 00	6,068	2,445 38
Hampden,	55,858,654 00	13,787	4,015 27
Hampshire,	25,504,050 00	8,665	2,943 34
Middlesex,	251,556,838 00	52,211	4,818 08
Nantucket,	1,822,428 00	655	2,782 33
Norfolk,	85,762,867 00	18,045	4,641 88
Plymouth,	30,751,063 00	12,846	2,393 82
Suffolk,	627,676,574 00	49,722	12,623 72
Worcester,	121,905,942 00	37,116	3,284 46
State,	\$1,497,351,686 00	278,249	\$5,381 33

It will be borne in mind that this table is one of averages, and discloses the wide contrasts which would appear in a similar comparison of the towns and cities. Still, enough is shown to prove the general statements already made.

A brief inspection shows that the valuation of the State, divided by the number of persons between five and fifteen, gives to each \$5,381.33, which is a larger amount than is found by a similar process in any county, except Suffolk. It also appears that there is a difference in the unit of valuation represented by a single child, between Suffolk and Barnstable, of something more than six to one. It will also appear that, in the other counties, the ratio between the number of pupils and the valuation is the lowest in those in which agriculture is the prevailing occupation.

The following tables, of which the first includes the names of the cities and towns, in three groups, having a valuation of more than \$10,000,000, with the valuation in 1865 and 1871, and the

TOWNS HAVING A VALUATION LESS THAN \$300,000, IN THREE GROUPS.

1. *Valuation less than \$100,000.*

N A M E.	Valuation of 1865.	Valuation of 1871.	Increase.	Decrease.
Mt. Washington, .	\$37,676 00	\$99,330 00	\$11,654 00	-
Monroe, .	79,375 00	50,216 00	-	\$29,159 00

2. *Valuation less than \$200,000.*

Eastham, .	\$219,948 00	\$188,177 00	-	\$31,771 00
New Ashford, .	108,662 00	110,495 00	\$1,833 00	-
Peru, .	214,930 00	197,782 00	-	17,148 00
Gosnold, .	112,998 00	167,756 00	54,763 00	-
Hawley, .	182,638 00	173,259 00	-	9,379 00
Rowe, .	180,425 00	178,951 00	-	1,474 00
Holland, .	181,000 00	150,504 00	19,504 00	-
Montgomery, .	158,850 00	152,800 00	-	6,050 00
Goshen, .	152,796 00	143,000 00	-	9,796 00

3. *Valuation less than \$300,000.*

Truro, .	\$361,717 00	\$272,131 00	-	\$69,586 00
Alford, .	340,490 00	296,821 00	-	44,169 00
Clarksburg, .	183,234 00	244,857 00	\$111,623 00	-
Florida, .	152,523 00	205,037 00	52,514 00	-
Monterey, .	292,117 00	282,858 00	-	9,259 00
Savoy, .	272,400 00	282,586 00	10,186 00	-
Tyringham, .	299,594 00	278,261 00	-	21,333 00
Windsor, .	303,824 00	297,053 00	-	6,271 00
Chilmark, .	350,801 00	292,013 00	-	58,788 00
Heath, .	232,551 00	256,568 00	24,017 00	-
Leyden, .	278,647 00	229,284 00	-	49,363 00
Shutesbury, .	219,250 00	200,490 00	-	18,760 00
Warwick, .	229,558 00	226,307 00	-	3,251 00
Wendell, .	201,657 00	200,768 00	-	889 00
Russell, .	212,800 00	274,989 00	62,189 00	-
Tolland, .	298,588 00	294,503 00	-	4,086 00
Greenwich, .	261,416 00	297,455 00	36,039 00	-
Pelham, .	197,457 00	207,860 00	9,903 00	-
Plainfield, .	239,097 00	229,260 00	-	9,837 00
Prescott, .	211,712 00	213,798 00	2,086 00	-
Boxborough, .	238,592 00	247,214 00	8,622 00	-
Dunstable, .	391,146 00	289,407 00	-	101,739 00
Hull, .	150,864 00	286,087 00	135,223 00	-
Plympton, .	304,305 00	292,459 00	-	11,846 00
Dana, .	242,117 00	271,869 00	29,752 00	-
Phillipston, .	320,834 00	289,018 00	-	31,816 00
Total of 37 Towns,	\$8,366,084 00	\$8,370,222 00	\$4,138 00	-

By the first of the foregoing tables it appears that while in the period of six years the increase in valuation has been \$487,641,516, the growth in the eighteen cities and towns named has been \$371,505,442, or more than seventy-six per cent. of the whole gain; also, that the whole valuation of these places exceeds the whole valuation of the Commonwealth in 1865 by nearly four millions of dollars;—and further that while the ratio of increase of the whole number of the towns named is 58 per cent. nearly, that of the second group is 99 per cent., and in several, as in Fall River, Somerville and Fitchburg, the valuation is considerably more than doubled.

On the other hand it appears that of the 37 towns enumerated, 22 have diminished in valuation, and in 15 the valuation has increased, and that the total of increase over that of decrease is only \$4,138, or less than $\frac{5}{1000}$ of one per cent.

Between these extremes are found the remaining three hundred towns which made returns to this office, varying in valuation from about \$300,000 to \$10,000,000, with an aggregate of \$479,163,000, and exhibiting an increase of \$107,541,000. These towns, if tabulated like the others, would also illustrate the same general law of growth, to wit: that the rate of increase for the period named is in proportion to the comparative valuation at the beginning of it. To this law there are a few notable exceptions, as in the case of Nahant, whose *increase of eleven-fold* in six years, shows, doubtless, how attractive a place of resort it has come to be in *very early summer*.

Having shown, by the foregoing statistical tables, the striking inequalities which the ratio of wealth to school population in the several counties in the State exhibit, and also that these inequalities are rapidly becoming greater, the next step will be to point out the effect produced by this condition of things upon the comparative burden of taxation borne by the several towns in the support of the Public Schools.

Accordingly, I invite careful attention to the table printed in the appendix to this Report, which gives, *first*, the cities and towns of each county arranged alphabetically; *second*, the percentage of the tax for the support of schools in each, during the school year 1870–71, on the valuation of 1871; *third*, the amount of said tax to each person between 5 and 15; *fourth*, the average length of the schools in each town during the year 1870–71.

The average for the several counties and the State are also given.

The first thing which strikes the eye on inspecting this table, is the remarkable inequality which runs through the column which contains the rate per cent. of taxation.

We note that the average for the State is 2 mills and $\frac{1}{100}$ on the dollar; that the highest rate is 5 mills and $\frac{2}{100}$ in Wellfleet, and the lowest $\frac{2}{100}$ of a mill, in Nahant. We find further, that in 7 towns the rate is over 5 mills; in 28 it is less than 5 and over 4 mills; in 114 it is less than 4 and over 3 mills; in 145 it is between 2 and 3 mills; in 34 it is between 1 and 2 mills, in which class Boston and several other of the large cities and towns are included.

The county averages show that the percentage of Barnstable is 3.89 mills, and that of Suffolk 1.52 mills.

The second column discloses like inequalities in the amount per pupil which said taxation furnishes.

The average for the State is \$11.78.

Forty-six towns paid more than the average, of which Brookline stands at the head with \$25.83 to the scholar. Two hundred and eighty-four towns paid less than the average, the lowest being Savoy, with \$3.50 to the scholar. The extremes of the county averages are \$6.40 per scholar in Dukes, and \$19.16 per scholar in Suffolk.

Similar inequalities will also appear as we examine the third column, which records the average length of the schools. Six months, it will be remembered, is the statute time. The average of the State is *eight* months and *nine* days. The table shows that the number of towns having schools

Not exceeding 6 months is	.	.	.	.	.	.	47
Over 6 and less than 7,	.	.	.	.	.	.	73
Over 7 and less than 8,	.	.	.	.	.	.	67
Over 8 and less than 9,	.	.	.	.	.	.	60
Over 9 and less than 10,	.	.	.	.	.	.	44
Over 10,	.	.	.	.	.	.	89

The extremes are Boston, whose schools are ten months and sixteen days in length; and Peru, with schools of four months and thirteen days.

The extremes of the county averages are Dukes and Franklin, with schools for six months and nine days ; and Suffolk, in which the average is ten months and fourteen days.

Without making further specifications, I simply state the general law which appears on a comparison of the condition of the several points named, which is that the amount appropriated to each pupil and the average length of the schools are the lowest in those towns where the rate of taxation is the highest ; and the burden, measured in this way, of maintaining these schools in a large number of the rural towns is threefold greater than in many of the wealthy cities and large towns.

Besides the short schools stated in the table, there are two other important particulars in respect to which the rural towns labor under serious disadvantages, which cannot be stated in tables of statistics.

First. In the character of their teachers. As the school terms are short, and the wages paid are comparatively small, the higher grades of teachers cannot be secured. These find employment where the situations are permanent, and wages are higher. The consequence is, that while many schools are *kept* in these towns, very few are *taught*.

Second. These towns are unable to provide themselves with school-houses adapted to the needs of a successful school, and in only a small number of them are found the proper furniture, and necessary books of reference, illustrative apparatus, &c., for the aid of the teacher.

If I am not mistaken, it sufficiently appears from this imperfect discussion, that there is a wide disparity in the burdens which the present method of supporting our Public Schools imposes ; that in a large number of towns these burdens are very "grievous to be borne," if not positively unjust since no corresponding benefits are received.

That these burdens, borne not for the good of individuals or of the towns alone, but chiefly in furtherance of the common weal, should be in some good measure equalized, I am sure no one will deny.

I therefore invite your attention to a method for this purpose, which is in my judgment alike practical and just in its application.

I propose that a school tax of one-half of one mill on the dollar

on the whole valuation of the Commonwealth, be annually assessed, collected and paid into the treasury, in the same manner as other State taxes, and when so paid that it be designated by the treasurer as the half-mill school fund for the support of Public Schools; and further, that said fund be apportioned and distributed among the several cities and towns in the Commonwealth according to the number of persons therein between the ages of five and fifteen, and in the same manner and on the same conditions as one-half of the income of the school fund is apportioned and distributed.

This tax, assessed on the valuation of 1871, will yield \$748,-675.84; and when distributed in the manner proposed, \$2.69 to each child between five and fifteen years of age, or a little over one-fifth of the average sum raised by taxation for each child.

I here invite a careful study of a table found in the appendix, which gives, *first*, the names of all the towns in the Commonwealth from which returns were received at this office for 1870-71; *second*, the valuation of each in 1871; *third*, the amount of a half mill tax assessed on such valuation; *fourth*, the amount to be received by each town on a distribution of the fund created by said tax according to the number of persons therein between the ages of five and fifteen years; *fifth*, the amount of gain or loss in each.

It will be understood that those towns will receive from the fund more than they contribute, in which the ratio between the number of persons of the age mentioned is less than the average (see Appendix, C) for the whole State, and that those will receive less than they contribute in which such ratio is greater than the average. It will also be seen by looking at the statistics in table B, that in a large proportion of the latter towns the *rate* of taxation is the lowest recorded.

With respect to the plan here proposed I suggest:—

First. That it is not a scheme for increasing the cost of supporting our schools. Not a dollar need to be added to the *average* cost. It is simply nothing more nor less than raising the needed amount in a more equitable way than at present.

Second. That each town and each person will contribute in an equal, and therefore just, ratio to the taxable property of each.

Third. That the method of distribution is the only one which is just and equitable and at the same time practicable. Since every town contributes to the general weal, precisely according to the number of youth which it educates, and thus fits for good citizens,

so it is plain that the amount contributed by the State should be determined by the number so educated, with the single modification, if any, perhaps, in favor of those places which incur the heaviest rate of taxation.

Fourth. That it will give a coherence and unity to our school system which it now lacks, and thus become a source of vigor and strength. It will create a stronger sympathy between the different municipalities, as mutual contributors to and receivers from a common fund, as well as the subjects of a common law. Indeed, the laws passed from time to time in the interest of harmonious and progressive action will be no longer regarded, especially by the smaller and less favored towns, in the light of arbitrary mandates, but rather as beneficent rules of action suited to the exigencies of all and for the general good. The *enforcement* of the laws will give place to a *cheerful obedience* to them.

While in the large cities and towns the burden imposed by the proposed measure will be hardly appreciable, the relief to the smaller ones will be most grateful and timely; confidence and hope will take the place of discouragement and discontent; greater efforts will follow; a more thoroughly instructed and altogether higher grade of teachers will be employed, and for longer terms of time; and a better class of school-houses, with fitting apparatus and furniture will take the place of the rude, unsightly and uncomfortable structures, which, in too large numbers, still linger among us.

To the proposed plan it may be objected:—

1. That the distribution of so large a sum may prove to be an injury rather than a benefit to the small towns, inasmuch as the relief extended will tend to remove that quick and pervading interest in their schools which always springs from the effort to sustain them, and therefore that the sum now distributed from the income of the school fund is quite sufficient for all particular needs.

To this I reply, that the income of the school fund now distributed among the towns barely serves to defray the expenses of superintending the schools, and printing the annual reports, and furnishes little or no aid in supporting them. I further reply, that since the amount to be received is less than one-fourth of the sum raised by taxation for each child in the State, there is little danger in the direction indicated. Moreover, in the

larger places, where the burden of taxation is the lightest, no such diminution of interest in the Public Schools is experienced. It is only where the towns rely upon the State for the entire support of their schools, as was the case forty years ago in Connecticut, that any lack of interest in them is to be apprehended.

It was long among us the fashion to draw comparisons quite favorable to ourselves, between our Public Schools and those of our sister State, and to attribute the supposed inferiority of hers to the existence of her noble school fund, overlooking the far more potent cause, which was, that our schools were FREE, and so, in the full sense, COMMON, while hers were supported in part by a system of rate bills, and, therefore, *exclusive* and not *common* schools.

2. That it will work injustice to the towns whose contributions to the fund will be larger than the amounts they will receive. This is one of those *surface* objections which never fail to spring to the lips of the narrow and selfish whenever confronted with the collector of a tax for the general good.

"I have no children," says the rich but childless tax-payer; "why should I be taxed to educate my neighbors' children?" He fails or refuses to see that his interest of person and property alike are so interlaced with those of the community where he dwells, that his security of life and limb and dwelling, and the value of every rood of his lands and every dollar which he has hoarded, are immediately and vitally affected by the intellectual and moral training of these same children, for insuring which he grudges the pittance demanded.

Precisely such in principle, or rather in the want of principle, is the objection which I have named. And the answer is the same.

The Commonwealth is a political unit; a whole of which the municipalities are but fractions; and not as many, misled by a false analogy with the national Union, are wont to suppose, the representative head of an aggregation or collection of independent units. It is a living organism, of which the cities and towns are members, not isolated or independent, "but fitly compacted and joined" into one "body politic," so that "whether one member suffer, all the members suffer with it; or one member be honored, all the members rejoice with it."

Hence, whatever institutions exist, and whatever forms of public action prevail, whether their object be the administration of

justice, the defence against invasion or insurrection, the furtherance of great public improvements, the administration of large charities, or the general diffusion of intelligence and morality, which are essential to the healthful life and growth of the whole State, these are equally essential to that of every member of it; and so, by an inevitable logic, they claim support from the equal contribution of all. This is the general law.

That our system of Public Schools falls within this law no one will deny. Else why the existence upon the statute book, for two hundred and twenty-five years, of stringent laws to compel their support? and why such universal obedience to those laws, but for the full acceptance of the reasons which gave them birth? On this point the convictions of our people, inwrought by an experience coeval with our political history, cannot be shaken. It is known and felt to-day, that the humble school-house on the slopes of the Hoosac Mountains, or the sandy ridges of the Cape, no less than the proud palace of the great town or city, is giving forth tides of life and health which reach every member of the "body politic."

Nay, more; it is known and felt to-day, and nowhere more strongly than in the cities themselves, that, notwithstanding the rapid drift of wealth and population to them, they cannot afford to lose the elements of security, wealth and power which the rural towns supply; they cannot afford to suffer any shrinkage in the educational advantages of these towns which shall drive from the ancestral farms and homesteads the descendants of the men who first redeemed them from the wilderness, and thus put a stop to the recruitment of fresh and vigorous manhood to fill the wastes of city life; and when the great strain and pressure of war, foreign or domestic, shall come on the Commonwealth, she can ill afford to lose the array of stalwart and intelligent yeomanry who have learned the lessons of patriotic duty in the record of the lives and deeds of kindred who have gone to honored graves before them.

Legislation is eminently a practical business, and, in giving it direction and shape, it is always the part of wisdom to seek for guidance in the light of experience. I am happy to be able to add, that on the subject before us we are not left without "witness," in the experience of a majority of our sister States.

Of the New England States, Rhode Island, by a general law,

appropriates, annually, from the treasury, \$90,000, for the support of Common Schools, or about \$2.25 to each pupil.

In Connecticut, the entire income of her school fund is thus devoted, yielding \$1 per scholar, in addition to which a State tax is laid which adds fifty cents per scholar to that sum.

The legislature of Maine has, during the present winter, levied a State tax of one mill on the dollar for the same purpose.

Passing from New England we learn that the same system has prevailed in the great State of New York, since 1851. As we find in this State conditions similar to our own in respect to the unequal distribution of population and wealth, her example has a special significance for us.

In the year just mentioned an Act was passed to abolish the "rate system," which had hitherto prevailed, and to establish free schools instead; also, to raise \$800,000, by a State tax, for their support. At the end of three years, a fixed *rate* was substituted for a fixed *sum*, on the ground that, while the *rate* remained the same, the amount raised would gradually increase to meet the wants of the growing population. The policy thus initiated, although it met at the first with some local opposition, chiefly from the city of New York, numbered among its advocates the ablest men of the State, some of whom have earned more than a national reputation; and is now justly regarded with universal favor, both in the city and the country as the "corner stone" of her free-school system.

The present rate is one and one-fourth mills on the dollar; and the amount raised in 1871 was \$2,416,000. Adding to this the income of permanent funds, and deducting sundry general expenses, the amount appropriated to the Public Schools, for 1872, is nearly \$2,600,000,* considerably more than one-third of the whole sum expended for their support in 1871.

I need not say that from the period first mentioned the evidences of progress in the Public School system of New York have multiplied with a rapidity scarcely paralleled in any other State in the Union,—and that no small share of this is owing, as those who administer it declare, to the policy which I have described.

I am indebted to the report of Mr. Northrop, Secretary of the Connecticut Board of Education, made in June last, for the following statements in relation to the methods adopted by other States than those already named for the support of their schools.

* Of this sum, the county of New York contributes nearly \$800,000 more than it receives.

Alabama.—The constitution adopted in 1867 provides that “one-fifth of the aggregate annual revenue of the State shall be devoted exclusively to the maintenance of public schools.”

Arkansas.—The school law of 1868 provides that a tax of “one dollar per capita * * on every male inhabitant over the age of twenty-one years, and so much of the ordinary annual revenues of the State as may hereafter be set apart by law for such purposes, shall be faithfully appropriated for maintaining a system of free Common Schools in this State.”

California.—School laws of 1869. “An annual *ad valorem* tax of ten cents on each one hundred dollars” (equal to one mill on the dollar), is levied upon “all taxable property throughout the State,” for school purposes, and is “called and known as the State School Tax.”

Georgia.—The school law of 1870 specifies several sources of revenue for the “State Common School Fund,” and makes it “the duty of the State Board of Education to determine the amount which, in addition to the foregoing, shall be raised annually by taxation upon all the taxable property of the State, and to report annually to the general assembly the estimate which they may find necessary to support a school in each school district in the State, at least three months in each year.”

Illinois.—The school law of 1865 provides for “the annual levy * * of two mills on each dollar’s valuation of all the taxable property in the State.” But while this law is levied under a law of the State, and is usually called the “State School Tax” it is, in effect, a tax upon each county, to support Public Schools within the county.

Kansas.—The present school law provides that “one mill upon the dollar valuation of all the taxable property of the State” shall be “assessed annually * * for the support of Common Schools.”

Kentucky.—The school law of March 21st, 1870, speaks of “the annual tax of five cents on each one hundred dollars * * heretofore imposed by law, and the annual tax of fifteen cents imposed by an act passed at the present session of the general assembly” (in all, two mills on the dollar).

Louisiana.—The school law of 1869 provides that “for school purposes there shall annually be levied * * and collected * * two mills on the dollar upon all the taxable property in each parish,” i. e. county.

Maryland.—The school law of 1865 provided for “a State tax of fifteen cents on each one hundred dollars of taxable property throughout the State” (equal to one and a half mills on the dollar). This law has been superseded by another, but there is still a State school tax, which yielded \$405,751.51, for the year ending September 30th, 1869.

New Jersey.—The school law passed in March, 1871, reads thus: "For the purpose of maintaining Free Public Schools, there shall be assessed, levied and collected annually * * a State school tax of two (2) mills on each dollar of the valuation." The State superintendent writes, "the receipts from the two mill school tax next year will be \$1,098,684. In addition to this, the State continues the appropriation heretofore made of \$100,000, making a total State appropriation of \$1,198,684 for school purposes next year. This gives \$4.64 for every child between 5 and 18 years of age."

North Carolina.—The school report for the year ending September 30th, 1870, gives the "Public School revenue" for that year as follows:—

From State tax on polls (\$1.10 each),	\$57,958 61
County tax on polls,	6,488 62
special tax of one-twelfth of one per cent.,	63,011 29
tax on retailers of spirituous liquors,	24,823 30
<hr/>	
Making a total of,	\$152,281 82

Ohio.—The school laws of 1865 provide for a State school tax "of one and three-tenths mills on the dollar," to "be applied exclusively to the support of Common Schools." In the year 1869–70, this tax yielded \$1,452,445.85.

Pennsylvania.—There is no separate State tax for schools, but the appropriation from the State treasury for school purposes is \$500,000 a year. Of this, \$83,300 is expended for Normal Schools and the salaries of county superintendents; the remainder, \$416,700, is paid directly for Public Schools.

Virginia.—The school law adopted July, 1870, provides for "a capitation tax not exceeding one dollar per annum, on every male citizen," of "the age of 21 years, and such tax on property, not less than one mill, nor more than 5 mills, on the dollar, as the general assembly shall from time to time order to be levied."

West Virginia.—The law of 1865 provides for "a capitation tax of one dollar on each * * male inhabitant over 21 years of age," and "a tax of ten cents upon the hundred dollars' valuation of all taxable property of the State."

Among the States named are several whose Public Schools rank among the highest in the country.

Of the States not named some have large permanent funds, the

income of which is sufficient to give the needed aid to their schools without a resort to taxation.

Having thus, as briefly and fairly as I could, presented the unequal burdens which the present mode of supporting our Public Schools imposes, and the remedy which, in the light of reason and experience, seems the most wise and just, I commend the subject to the calm judgment of those on whom the responsibility of decisive action rests.

JOSEPH WHITE.

BOSTON, 1872.

APPENDIX TO SECRETARY'S REPORT.

[A.]

PAPERS ON DRAWING.

ART EDUCATION, AND THE TEACHING OF DRAWING IN PUBLIC SCHOOLS.

[An Address delivered by Mr. WALTER SMITH, Professor of Art Education, and Head Master of the Normal Art School in the City of Boston, also State Director of Art Education in the Commonwealth of Massachusetts, before the Massachusetts State Teachers' Association, in Boston, Oct. 20, 1871.]

The occasion upon which I have the honor of appearing before you, is one of *such* rare occurrence, its importance educationally is so great, and the opportunity it gives me for the discharge of one of the first duties of my office so exceptionally timely, that I wish to depart from my usual custom in addressing extempore remarks upon the subject I have to treat; and, in order that I may neither waste your time by repetition, nor forget any connecting link in my discourse, I have written what I have to say, and will ask for your kindly attention and indulgence, whilst I read it to you.

In the presence of a body of educationists such as that I see before me, I need not do more than refer to the fact, that, by the law of Massachusetts, art education has been engrafted upon its far-famed system of public instruction, and henceforward will form a part, and, I hope and believe, no unimportant section of its excellent organization. Provision for the instruction in drawing of teachers and children in the Public Schools, and of adults in the night classes, either has been already made, or will be arranged for, as opportunities occur and teachers can be found. The passing of this law, and the efforts made to comply with it, will, it is supposed, create a desire for information concerning art education, of especial interest just now; and this must be the explanation of my being here to-day. Having been appointed by this city and the State to assist in their development of art education, I would take this opportunity of stating that I believe the choice of the Art authorities of the United Kingdom, upon the request of the school board of this city, fell upon me for recommendation to the appointments I now hold, because, though acquainted with the national system of my own country and of other European States, I am not committed to, nor do I wholly approve of,

any one of them, but believe in the construction of a system, in a country where the subject is new. We can adapt the good parts of all the old methods to the requirements of this country, and omit all the bad parts. And there can be no reason why the thoroughness which characterizes the general education of Massachusetts should not influence and give tone to any instruction in technical subjects which may be added to it. Whilst we may thus profit by the experience of other nations and older civilizations than our own, there will be many features of this country and of society so superior to theirs, and so much more favorable to the development and advancement of education, that I look forward to a future in which our field of art education shall, in no prominent part, be a reflex of others, but be a combination of excellences that will offer a model for their imitation.

So much of a general introduction I conceived to be necessary, before speaking practically on the subject we are about to consider.

That subject, briefly described, is "*Art Education, and the teaching of Drawing in Public Schools.*"

The kind of drawing which the State requires that its citizens shall have an opportunity of studying, is called "industrial drawing"; and wisely so called, for in that lies a justification of its public action in the matter.

It is so described, I apprehend, to distinguish it from those more ornamental or professional branches of art which people study rather as an amusement or gratification, or as a lucrative profession, than as an important element in the success of trades and manufactures. Economists are agreed that it fairly falls within the scope of government, in any civilized country, to initiate movements by which the trades or manufactures carried on by its subjects shall be improved in character and increased in value, and thus through a higher appreciation find a wider market for their consumption. The prosperity of the many is the argument upon which this agreement is founded. The principle thus acknowledged has led some of the most far-seeing and enlightened of modern governments to establish systems of art education, with a view of improving all branches of industrial trades and manufactures, having regard to the ultimate influence on production and sale, as well as increased value of exports and articles of home consumption. The success of these experiments has been so great that several European States at the present time owe their prosperity in no slight degree to the artistic excellence of their manufactures, brought about mainly by their cultivation of art education.

The time has arrived when the government of this State, and more especially of this city, has viewed the matter in the same light; and

thus we are upon the threshold of a new fabric,—a system of education for the city and the State.

The means whereby such a system would be best organized to meet the requirements of all classes of society, and keep supply and demand in their true relationship, has been a great problem to the educationists of this locality, as it has been previously to the educationists of the Old World. There are three sections of the public to be educated,—children, adult artisans, and the public generally, and all three come under neither of the two first divisions. How this has been provided for in most of the European States I may here shortly mention to you. For children, elementary drawing is taught as a part of general education in all Public Schools; for adult artisans, night schools and classes have been established in almost all towns or populous villages; and for the general public, museums, galleries of art, and courses of public lectures on art subjects are becoming general. Upon the comparative value of these several means, there may be and is much difference of opinion; but upon one point there is a general agreement, viz., that *to make national art education possible, it must commence with the children in Public Schools.*

After several unsuccessful experiments, that is the conclusion to which, twenty years ago, the educationists of Great Britain arrived, and the progress which has since been made in art education, and the consequent improvement of industrial art, is evidence enough that the problem had been solved, and that they were on the right track. To establish schools of art and art galleries, before the mass of the *community* were taught to draw, was like opening a university before the people knew the alphabet; but to provide both of these agencies in conjunction with, or as a continuation of, the instruction in drawing in Public Schools, was like a logical sequence, going in rational order from strength to strength of an unbroken chain, from bud to blossom and from branch to flower of natural educational growth.

Whilst England is appropriating all the features of the Massachusetts system of general education that are worth anything in the Forster's scheme, we are borrowing from Great Britain, as well as from other countries, the most valuable portions of their experience in technical education; and I venture to prophesy that upon a better general basis we shall erect an infinitely better superstructure, so that as the development of public opinion in this country will furnish the means for its accomplishment.

What has been done here in the way of instruction in night classes for adults, is sufficient to demonstrate the need of additional effort, and has shown the extent of the field awaiting culture at our hands, and the fact that already a Boston Museum of Fine and Industrial

is on the way, and its foundations laid on a broad and comprehensive plan, is a final proof that eventually no feature of a perfect one will be wanting to complete the fabric of art education.

Though these secondary agencies are matters of interest in a consideration of the whole subject, it is not with them especially that we have the most to do upon this occasion.

The *teaching of drawing in Public Schools* is that phase of the question which most nearly interests you, and concerning which I have the most to say. How, with our present means, and in a reasonable time, is it to be brought about, and what can be done to improve the teaching general?

Here, at this point, we are brought face to face with the same difficulty that has confronted the pioneers of art education elsewhere. Who is to teach drawing in the Public Schools? and the question must be answered in the same way. To this there can be but one answer, which is, There can be no special teachers of drawing as a separate subject, any more than of writing or arithmetic as separate subjects; but the general teachers themselves must learn and teach elementary drawing to the children, in the same way they learn and teach other subjects. It will only be by having a teacher of drawing in every class-room in every school in the State, that all the children can be taught to draw; and this you will see can be accomplished only by making the general teachers include drawing among their subjects of instruction. That is how the difficulty has been met in other countries, and is the only way possible of meeting it here. Now, if elementary drawing were either an abstruse subject, or as difficult of acquisition as a new language, it would seem something like a hardship that teachers, whose daily labor is so great and whose leisure is so scarce, should be expected to increase their labors and sacrifice their leisure to learn this new subject. But we have found in Europe that a valuable and sufficient power of drawing can be acquired, by teachers who have the desire to learn, in a comparatively short time, without any very great sacrifice either of their leisure or their income. At the present time, in the Boston Normal Art School the teachers of the city are receiving one lesson of one hour on alternate days, which, if they work out the exercises on each lesson, is in my opinion sufficient time to give; and I calculate that by next summer they will have passed through a course of instruction in two subjects, hand and model drawing, qualifying them to give their pupils lessons in the same.

Next year we shall take up the subjects of geometrical and perspective drawing; and though these subjects will entail a little more work, they will be got through in the sessions of one year.

I can hardly suppose that you will deem such an amount of attendance on two courses of lessons as too great a price to pay for the qualification to teach elementary drawing; and I desire to inspire with confidence in your own art powers, even if yet undeveloped, by saying that to those who are intimately acquainted with educational processes, as teachers must be, the labor of acquiring skill in drawing is reduced to a minimum, whilst the result is a practical certainty. As they have great experience in teaching other subjects, they have always found school-teachers, even with a very limited power in drawing, to make by far the best teachers of drawing; and what they themselves acquire without difficulty, they teach most successfully.

Drawing is in many respects like a language, a visible language, the language of form, having but two letters in its alphabet, the straight line and the curve; in this respect like our own written words, made up of combinations of straight and curved lines,—with this difference, that whilst a word suggests the name and thought, drawing suggests the thing itself. Both drawing and writing depend on attainment on the same faculty, the faculty of imitation; the former, drawing, being simpler in its elements than writing, is the most easy of acquirement. It has been amply demonstrated that every person who can be taught to write can be taught to draw; and where both are taught simultaneously, they assist each other,—success in one being a certain indication of success in both.

Imitative power is common to the human race, and exists in children before they can either walk or speak. It is developed so early that from the moment a child can hold a pencil, it may be taught to imitate by drawing the forms it sees. Those children whom we have found impossible to teach to write, it would be waste of time to attempt to teach to draw; for want of capacity in the first must proceed from some physical deficiency which would prove fatal also to success in drawing. But for the rest, who your own experience convinces you are a somewhat considerable majority, as soon as they begin to go to school, so soon should they begin learning to draw, and they will be found to take to and acquire it best who commence it earliest, and pursue it the most systematically through the whole school course. Neither is any special gift of more than usual talent required to enable persons to become excellent draughtsmen. It is a matter of mere conjecture whether such gifts exist at all; and even if certain if they do exist, their possession is of no account whatever when compared with perseverance and a determination to succeed. The best draughtsmen I have known began to draw at about five years old or earlier; and it is a singular commentary on genius, which is supposed to be heaven-born, that those men who are most un-

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acknowledged to be geniuses, have improvement, ignoring their supposition that they are like journeymen whilst learning. It may be expected that I should regard drawing. Much undoubtedly doing is carried on, that definite objectionable steps be graduated in difficulties. My own experience leads me to a very opposite method, and failing as human nature is varied in inclination should apply equally well to or develop the faculties of all. It supposes such a similarity of disposition existed or is likely to exist; and closely to principles, is at the same time not to cramp and destroy the faculties. In this matter much depends upon the method of the teacher producing better results. A teacher would upon the best of methods be, however, some schemes of drawing more widely tried than others, and improved by long practice.

The old drawing-master's method of copying, without any arrangement of exercises, followed no longer in any nation. In Public Schools under government inspection only, without extensive illustrations on the blackboard, is also becoming a thing of the past. Only described as the English blackboard drawing is perhaps the most common class teaching, but it should not be simultaneously given; nor can it be the concurrent use of text-books in the place of accurate illustrations of the course of work in support of school work. The teacher sometimes wholly by himself, he learns how to master an entirely new task without assistance from other people.

A group of art instruction in elementary schools suitable to the powers of the pupils, and includes:—1. Free-hand Drawing. 2. Memory Drawing. 3. Perspective. A thorough grounding in

best preparations for any further study of the higher branches of education. A pupil having passed examination in such, would be ready to take hold of the instruction in schools of art, or even to continue his studies by himself in more advanced subjects. The grade of five subjects named, is that in which the Public School teachers in England have to become proficient, and for a successful examination in which the government grants a drawing certificate, stating that the holder is competent to give instruction in drawing in Public Schools.

The adaptation of this course of study to the graded schools of this country is not a difficult matter, the moment the corps of teachers become qualified to teach drawing; and it can be commenced at once in those subjects which the teachers themselves are practising, and in which they have already become proficient in. The order in which the subjects are usually taken will decide the suitability of each to the different schools.

A simple arrangement would be as follows, giving three subjects to each grade of school :—

In Primary Schools—Free hand, Model and Memory Drawing.
Grammar Schools—Memory, Model and Geometrical “
High and Normal Schools—Memory, Model and Perspective “

I propose to describe to you in what manner and to what degree these objects may be taught in the three grades of schools.

1. PRIMARY SCHOOLS.

Free-hand outline Drawing.—In the very earliest lessons to the youngest children, drawings on the blackboard by the teacher are not only examples used, the illustrations being vertical, horizontal and oblique lines singly and in simple combinations, such as angles, squares, triangles, and the division of straight lines into equal or proportional parts; curved lines associated with straight lines on the simplest geometrical arrangement. That is the commencement of free-hand drawing, the pupils drawing on their slates until the first difficulties are overcome. A moderate use of Roman capital letters is not objectionable for children, but too frequent use is wearisome. Very young children draw best those forms in which there are the fewest possible lines, those lines expressing the forms of objects they are most familiar with—apples and pears, common crockery-ware, leaves of trees and flowers and such like. The older pupils who are drawing free-hand outline from the board upon paper, should have their subjects alternated with flat copies, to be drawn either the same size as the originals or enlarged a definite proportion, either a third, or a fourth, or by measure.

as an inch or two inches in height and proportionately in width. All the blackboard lessons are exercises in the reduction of forms, well to vary the lessons by practice of the identical size and by enlargements. I have found it not to be a good custom to keep children drawing on slates longer than the time when they attain the power of fairly balancing the forms given them to copy. It is so easy to blot out errors upon slates that carelessness often results from too much practice on them.

In the choice of examples, it should be remembered that diagrams and objects should be represented geometrically, not by views of the objects as seen in perspective, until the pupils have arrived at drawing objects. The principal use of free-hand outline drawing, is to teach pupils the proper use of materials, the names of lines and forms, to educate the eye in judging of proportion; also to inculcate an appreciation of the beautiful in curves and forms of objects.

The time given per week to drawing should not be less than two hours. With the youngest children, the length of each lesson should be more than half an hour, i. e. four *short* lessons per week; with the a little older, three lessons of forty minutes each; and with the best pupils, who draw upon paper, two lessons of an hour each.

It is of some importance in maintaining interest in the lessons, that a lesson should be complete in itself, the exercise be begun and finished within the allotted time; and if this be found difficult, it is better to take simpler examples with less work in them, than either to lengthen the time given, or leave the exercise unfinished. In the same class, if some pupils draw better than others, the best may be allowed to draw upon books, and the more backward on slates. Each exercise should be criticized by the teacher during the lesson, in addition to the general criticism from the blackboard, thus combining individual with class instruction.

The object given as a lesson should be well drawn on the blackboard before the lesson begins, and the teacher in giving the lesson should commence by explaining its proportions and general character, and then draw it again, step by step, during the process of the lesson, being followed by the class, line for line, as the form develops on the board.

The standard of quality in outline varies in different countries; but whether a thick or thin line be allowed, it must be the same thickness and thinness everywhere; and the best line, in my opinion, is, a thin, straight, unbroken line, without the slightest variation in a whole drawing, either in color or breadth.

Model Drawing in Outline.—The model drawing in Primary Schools

should be of an exceedingly simple character, for into the practice of it perspective must more or less enter. Only the children ought to attempt it; and the objects used, to be as much as possible those which appear of the same form on all sides. These may be defined as such objects as are turned in a lathe, or made upon a potter's wheel,—thus, a cylinder, a sphere, a cone, in geometric shape, a vase without a handle, a goblet, or a wine-glass, a basin, a saucer, a round bottle; or wooden vessels, such as a bucket or a round tub. These have the double advantage of being symmetrical, enabling the teacher and pupils to use a central line in drawing them, and they may be seen alike by all the pupils, so that the explanations and demonstrations given on the blackboard will apply to all the drawings made.

The models used should be painted white, which displays the form better than any color. If rectangular solids be used, such as cubical or oblong blocks, prisms, square boxes, chairs or such like, the teacher will find himself plunged at once into all the difficulties of linear perspective, beyond the understanding of children so young as those of Primary Schools.

With regard to the method of teaching, and implements used, what I have said with reference to free-hand drawing from flat examples on the blackboard applies similarly to object drawing. Care must be taken in setting a model for the class, that it is not placed so near any pupil as to give him a distorted view, or so far away as to be seen with difficulty. The best position with regard to height is that the top of the object should be at least six inches below the level of the pupil's eye. A set of three or four dozen objects should be kept in each class-room, in a cupboard or cabinet reserved for the purpose, and teachers might occasionally exchange models of equal value with each other, so as to give freshness and variety to the subjects; otherwise the pupils may get wearied of drawing the same objects over and over again.

Combined with free-hand and model drawing, the definition of plane geometric figures should be taught, and are best taught by being drawn as exercises, as well as learnt by heart. This will be preparation for geometrical drawing, to be afterwards learnt in the Grammar Schools, as well as being of great value in imparting correct knowledge of common forms.

Drawing from Memory.—The third subject for the Primary School is drawing from memory.

I attach the very highest importance to the systematic development of memory-drawing as an element of education, and art education is incomplete without it. Beginning with geometric forms of a g

It will be found possible to lead even the children in Primary Schools to reproduce entirely from memory the copies which they have previously drawn, however elaborate and full of detail they may be. All memory exercises will consist of recently finished drawings, the features of which will be easily remembered, though at first it may be necessary that the teacher should describe to the class some of the leading characters of the example given, to refresh the memory before the pupils proceed to draw it. At the conclusion of the exercise, the best and worst efforts should be taken to the board, and their good points and qualities pointed out and criticized, and an accurate drawing of the example be put on the board for each pupil to contrast and compare with his own work. He should then be allowed to correct or revise his drawing from the teacher's example upon the board. Such exercises in memory drawing may also occasionally be required of the pupils, with much advantage.

GRAMMAR SCHOOLS.

A group of subjects of model, memory, and geometrical drawing, suitable for pupils in Grammar Schools, introduces one new subject—that of geometrical drawing, which takes the place of free-hand outline, practised sufficiently in drawing from objects and memory. The model drawing may now be made to include such geometrical forms as can be used to convey the first elementary rules of perspective, such as the convergence of parallel lines retreating from the eye, the fore-shortening of lines and planes according to the angle they make with the direction in which the student is looking at the object, and other elementary rules. More difficult models being used, each pupil will have a different view of the same object, and though the general principles may and should be explained by diagrams on the blackboard, the teaching will be more individual than before. The drawing of heights and widths proportionately, and of vanishing points, by means of the pencil held in the hand, at the full extent of the outstretched arm, must be explained to and practised by the pupil, for that is the only practical and accurate method of model drawing. This way of measuring, which every draughtsman and architect adopts, does not come under the head or description of mechanical measurement, being only the means of ascertaining the proportion of the various parts, as affected by the laws of perspective. Instead of single objects being given, as in the primary schools, groups of objects may profitably be placed before the pupils, some of which they have already drawn, and others which will be fresh to them. Geometrical solids, such as the cube, oblong block, triangular, square, pentagonal and hexagonal prisms and pyramids, as well as the cylin-

der, cone and sphere, are very usefully employed, each or more one at a time, in conjunction with some familiar object, together posing a group of forms. There will shortly be in this city a complete set of such models, which will be deposited, for the examination of teachers, in the Appleton Street School; and I would commend them to your careful notice. The great difficulty, at present, the friends of art education in America will have to meet, is the provision of suitable examples for study; so that I see no other way of forwarding the cause or of removing the difficulty than by establishing an agency, either by the State or through private enterprise, where all the most approved models and copies may always be available at a moderate cost. At present, models which a professionally educated art master could conscientiously use, do not apparently come on sale in the United States.

In England, nearly forty years ago, when the nation was awakened to the necessity of at once giving an art education to its people, two difficulties were the want of teachers and of copies. There has been our want, but it will exist no longer than people feel apprehensive about the matter. When once a real, earnest demand shall exist, the want can be supplied, in as many months as it has taken years to produce them in the old country. In this matter, England has been the pioneer, and we must profit by her experience.

Memory Drawing.—Just as the groups of subjects in model drawing will be more difficult than those used in Primary Schools, in the course the memory exercises will be more advanced also. Sometimes a whole class may be required to draw any given example which has been practised months before, or perhaps formed part of a course in the Primary Schools. Every pupil should have one lesson per week drawing on the blackboard, in chalk, on a large scale. It would be well to let a third of the class draw either their models or memory exercises, upon the board,—each lesson,—so that during the week three lessons be given, all will have drawn upon the board.

Geometrical Drawing.—The pupils having been previously acquainted with the definitions of terms used in plane geometry, may be passed on to the construction of figures. Each pupil requires a good pair of compasses, a ruler with inches marked upon it, and a ruled book or smooth paper to work his problems in. The teacher enunciates a problem to the class, who writes the enunciation from his dictionary. He then works out the problem on the board, the class following by step. Six elementary problems are an hour's work, and four or five more intricate problems will take the same time. Every th

lesson in geometrical drawing should be a resumé from memory of previous lessons. There is one consideration, with reference to the subject, teachers should strongly impress upon the minds of

As demonstrations of the results are not required, their own work must be the demonstration. If a geometrical drawing is not true, it is nothing, or worse than nothing. It does not pretend to be beautiful, and unless intensely true in its result, is not useful, but is of delusive and worthless ugliness. I mention this because I will sometimes apologize for inaccurate results, by stating that I do not know how to work the problem, which always seems to me an aggravation of the original offence rather than an excuse for it. Like a man caught in the act of telling a lie, who tries to excuse himself on the grounds that he knew it was a lie, and did not himself believe the statement he was making. Accuracy and inaccuracy are merely habits which are formed either by good training or bad and false instruction.

High and Normal Schools.—In the High and Normal Schools a wider range of study is permissible, because the capacities of the students are more developed. Still, it seems to me that there is some danger in attempting too much. In future years it will be desirable that the students in the Normal Schools should, during their period of study, complete an advanced course of lessons in the five subjects of hand, model, memory, geometrical and perspective drawing, and passing examinations in them receive diplomas or certificates of competency to give instruction, the examinations being conducted, and diplomas awarded by the responsible officers of the State government.

This, however, must be a matter of growth.

The model drawing of the High and Normal Schools should be made an instructive course, and besides illustrating the use of different materials, as chalk, monochrome and color, be very comprehensive in its scope. Drawing from plaster casts in crayon and sepia; from studies of natural objects, as fruits and flowers; from still life and objects of art, in water-colors,—will give a wider scope and a greater interest to the object drawing than was possible in the elementary course.

Drawing ought to be so familiar to the pupils who have previously studied through the Primary and Grammar Schools, that in the High and Normal Schools it should be used generally in the study of other subjects, and exercises in botany, geology, natural history, anatomy or mechanics be readily illustrated by drawings and sketches, in the preparation of which instruction would be given to the students in drawing and coloring.

In these exercises high finish or pretty ornamental painting are to be sought after,—good drawing, having a round effect, and faint tinted like nature, being more educational, besides being more economical of time, than finished painting.

In time I hope the neglected subject of art education may become of so much value educationally, that we shall use it freely in acquiring knowledge of history, of the social life of other ages and people, of the glorious art epochs of the old world, and the still glorious natural phenomena which surround us every day in the new world. A real perception of the beautiful in nature and art, and the enjoyment arising therefrom, will be ample compensation for time spent in study, by those who derive no pecuniary or social advantages from it.

The additional subject of *Perspective* is put down for study in High and Normal Schools. It is of course of the very highest importance to the proper understanding of all kinds of drawing, and has the same relationship to linear representation that grammar has to language. It would be possible to speak grammatically without a knowledge of grammar, and to draw accurately, as Turner did, without technical knowledge of perspective; but these things are possible only to the few whose enormous experience compensates for the want of education. Perspective, studied systematically, gives the teacher of drawing such a grasp of the whole subject of linear representation, that, combined with model and memory drawing, he can never be at a loss for examples, nor fear to reproduce them.

In this subject, which is taught entirely on the blackboard, the teacher requires much power of illustration by sketches, and great clearness of verbal explanation, to make the problems intelligible to the student. Great experience in teaching the subject has enabled us to reduce its main principles to a plain system, and when we see the assistance of a good text-book it will be found comparatively easy of attainment. Geometrical drawing must necessarily precede the study of perspective, which is dependent on it for the construction of the forms used, as well as for experience in handling the instrument with which it is worked out.

I feel now that I have occupied more than I had a right to of valuable time, and with a few words will conclude. It is difficult without illustrations and examples of reference, to convey clearly that is meant about a system of art education. Being here at a comparatively new subject, I have been precluded from appealing to your remembrance of exhibitions and public displays of the work of our students. It was intended to have here to-night a collection of drawings, the property of the State of Massachusetts, recently acquired partly by gift and partly by purchase, from the South Kensington

m in London, illustrating the course of study in English schools. Practical difficulties stood in the way of this; but I am glad to refer you to an exhibition which is shortly to be held in rooms of the society of artists in Boston, which every lover of art and friend of art education should see. Including two valuable collections of students' drawings,—the one just referred to, and another which is the property of the city of Boston,—there will be many sets of works displaying the systems of art education in France and Belgium. The three systems are entirely different, and I think you will agree with me in saying, when you see the works, that each has great and distinctive merits. The exhibition will offer the opportunity also for a comparison of results which will be of the greatest interest to the educationist. I believe I am right in saying that it will be open in about a fortnight from the present time.

On a just recognition of the good features in the systems of other countries where the subject is not a new one, and a deliberate consideration of our own circumstances and requirements, let us hope in due season to establish a sound system of art education in this State. It is a branch of education capable of a very rapid growth, for you know that "art is long"; but the same wisdom that has built up the efficient educational system of Massachusetts, will, I feel confident, be as capable of perfecting and completing each phase and stage that it may be considered desirable to add to that system; and having passed the law that it shall be done, will be in no disposition to look back, or be impatient and lose heart if the highest results do not immediately manifest themselves.

I have the satisfaction of knowing, that, in beginning with the Normal Schools, we are beginning at the right end; and we have the prospect of possessing, before very long, a central institute of art in the Boston Museum of Art, which will be like the headquarters of art for the State. The education of teachers will be provided for in this city by the Normal Art School, and before very long there will no longer be a school in which satisfactory instruction is not given. The abundance of examples to carry on an efficient course of art education will follow upon the demand for them, without unnecessary delay, and thus I maintain that the prospects of naturalizing the subject and promoting its development are of the most encouraging character. In all, there are men in this city and State who take the most comprehensive view of the public aspect of this question, and are ready to spare neither their time nor their means in carrying it through. To them, and to all others who assist in the cause, I wish to express my thanks, and feel a strong gratification on my own part that I shall be permitted to help in the inauguration of a system of art education in our great country.

Commonwealth of Massachusetts.

OFFICE OF THE SECRETARY OF THE BOARD OF EDUCATION
BOSTON, November 10, 1871.*Chairman of the School Committee of*

Your attention is respectfully invited to the following law :—

[Chapter 248, Acts of 1870.]

SECT. 1. The first section of chapter thirty-eight of the General Statutes is hereby amended, so as to include drawing among the branches of learning, and are by said section required to be taught in the public schools

SECT. 2. Any city or town may, and every city and town having more than ten thousand inhabitants, shall annually make provision for giving free instruction in industrial or mechanical drawing to persons over fifteen years of age, either in day or evening schools, under the direction of the school committee.

SECT. 3. This act shall take effect upon its passage. [Approved May 1, 1871.]

In order to furnish the necessary information, and to enable the cities and towns included by population under the law above recited to comply with the provisions of its enactments, the State Board of Education has appointed a Special Commissioner, whose duty will be to give professional advice on all technical matters relating to Art Education in the State, and in other matters to carry out the decisions of the Board in respect thereto, as its duty may require. It has been felt that to engraft this comparatively new branch of instruction upon the educational system of the State, and to make the subject of night-school instruction, would require experienced and professional knowledge both of the means and appliances by which Art Education can be carried out, and for its organization and supervision when established.

The means adopted by the Board to secure this information, and the directions have been as follows :—

The city of Boston having recently appointed a Head-Master of the Normal Art School, and Director of the night classes for Drawing established in compliance with the Act, and having only need for the employment of a portion of his time, the State Board has also secured his services as professional adviser in the matter of Art Education. This gentleman, Mr. W. SMITH, late of England, has entered upon his duties as State Director of Art Education, and the object of this circular is to explain to the officers of the cities and towns in the State, to the teachers of the Public Schools in the Commonwealth, and others interested in the advancement of Art Education, how they may avail themselves

stance. Numerous applications for information, arising probably from a desire to comply with the law, have made the issue of some general information a matter of necessity.

PUBLIC SCHOOLS.

It is supposed that before drawing can be satisfactorily taught in schools, the teachers must have a clear and well-defined system of elementary teaching brought before them which can be acquired by themselves, and not too difficult to impart to their pupils. This is being partially accomplished by the practical demonstrations and addresses on the teaching of drawing given by the Director at the Teachers' Institutes, and will be continued by the same means at the Normal Schools, and in other ways. The reprint of a paper by him on the subject, read before the Massachusetts State Teachers' Association, and of other papers, in whole or in part, heretofore printed by the Board, will be made, and circulated among the teachers of the Public Schools in the State. Other papers bearing upon the question, containing such information as may be deemed of service to teachers, may also be issued, as occasion demands. Inquiries on special subjects, or technical difficulties, may also be addressed by teachers to the State Director of Art Education.

EVENING CLASSES.

A circular stating the course of instruction in Drawing, arranged by Mr. Smith, and in use at the free evening classes of the city of Boston, is appended to this. It is constructed so as to embody such general subjects as are attainable by all classes of students, in evening work, by gas-light, color being generally excluded from the course. It comprises what is usually included under the term "Mechanical or Industrial Drawing"; but to this might be added, as of equal importance to some trades and occupations, the subjects of modelling in clay and casting in plaster, where room and appliances are obtainable for the study, and a teacher can be procured. To facilitate the establishment of such evening classes, the Board has obtained a complete collection of models, casts, and other apparatus and examples, in use at the Schools of Art of Great Britain, together with a set of the works of students in those schools, illustrating a complete course of instruction in all the stages of Art Study, by actual specimens of the students' productions, from the most elementary works to the most advanced. This collection of drawings and examples is to be deposited at the State House. It will be lent for exhibition to any city or town engaged in forming free evening drawing classes, provided the

committee of local Board of Education will be responsible for the display, safe custody and return. At the time of such exhibition, the Director of Art Education will, on request, attend every conference of the School Committee in the locality, to afford the detailed information requisite in commencing Art classes, and in the teaching and general management, and give, if desirable, an opinion on the subject to public meetings called to consider the question of Art Education. As, however, many of such applications may be expected, it will be necessary to give notice some time previous to the period at which such exhibitions, conferences or meetings may be desired, in order that arrangements may be made without interference with similar efforts in other places.

Among the several ways in which the State Director of Art Education may be of assistance to School Boards are the following :-

1. Giving information as to the best methods of fitting, arranging and equipping class rooms for the study of drawing—the provision, cost and preparation of examples for instruction.
2. Consultation with teachers, or their examination as to fitness for the position as teachers, and instructing them in the use of the examples provided for the course of study.

All applications in response to this circular should be addressed to the following: **WALTER SMITH, Esq., Director of Art Education,** 100 Broadway, South Boston.

FREE EVENING CLASSES IN BOSTON for the Study of Industrial Design, to be held in the Normal Art School, Appleton Street, and in the Institute of Technology, Boylston Street.

Days and hours of study: Monday, Tuesday, Thursday and Friday, 7 to 9, P. M.

Students allowed to attend either on Monday and Thursday, or Tuesday and Friday evenings, but not oftener.

STAGES AND SUBJECTS OF STUDY.

<i>Elementary Course</i> From Copies.	{	STAGE I—Instrumental Drawing.	Sections: a, Linear Geometry; b, Mechanical and Machine Drawing; c, Linear Perspective; d, Details of Architectural Drawing and Engineering Construction; e, Ship-Drafting.
<i>Advanced Course.</i> From the Real Object or Design.	{		[Stage I, consisting of Instrumental Drawing, is the present carried on at the Institute of Technology.]

old one is so stamped. All finished drawings are to be left in the School. The Drawing Committee reserve the right of retaining selected works; the remainder will be returned to their authors, after each annual exhibition.

Voluntary examinations will be held at the end of each term, in April, for those who wish to obtain certificates of proficiency.

WM. T. BRIGHAM, *Chairman.*

WALTER SMITH, *Director of the Class.*

Your attention is also respectfully invited to the papers on the subject of Drawing, printed in the Appendix to the Thirty-Fourth Report of the Secretary of the Board.

JOSEPH WHITE,

Secretary of the Board of Education.

TEACHERS' CLASS.

There is an urgent demand for teachers who are qualified to take charge of the evening classes in free-hand and industrial drawing required by law in the large towns of this State.

Letters from nearly all the superintendents of public instruction in these towns state that the experience of the past winter indicates a necessity for providing, at once, some normal instruction for persons who have some skill in drawing who would be glad to fit themselves for this special work.

Such a course of instruction is also a good training for all-tenured teachers in Public Schools.

Arrangements have been made to organize a class for a course of thirty lessons, provided a sufficient number apply, at the rooms of the Worcester Free Institute, the use of which has been generously offered by the Trustees, free of charge. The conditions under which the class will be opened are the following, viz. :—

1. The number in the class shall not be less than thirty.
2. Each pupil must have some knowledge of the subject at the outset.
3. The number of lessons will be thirty, and will be essentially a repetition of the course given in this city last winter.
4. The lessons will be given twice a day for the first five days in the beginning early in July; and the hours will be so arranged that residents of neighboring towns can come and return daily by cars.
5. The instruction will be given by members of the faculty of the Worcester Free Institute.
6. The main object of the course will be to teach ladies and gentlemen how to draw, how to teach drawing.

The fee for the course will be ten dollars, payable in advance.

Applications must be made before the twentieth of June.

Full particulars in regard to this class will be given as soon as the question of foundation is settled.

Board can be obtained in Worcester at one dollar a day.

A class for Laboratory practice will also be formed at the same time, under the same conditions as to time, instruction, number and expense. Any person who has some knowledge of elementary chemistry may join this class. The exercises will be so arranged that those who wish can join both classes.

Applications for either class are to be sent to

A. P. MARBLE,
Supt. Public Instruction,
Worcester, Mass.

BERKSHIRE COUNTY—CONTINUED.

CITY OR TOWN.	Number of mills to the dollar appropriated to public schools, on the Valuation of 1871.	Expended for each child between 5 and 15 years of age, 1870-71.	Average length of schools in 1870-71.	
			Mos.	Days
Adams,	\$.002-88	\$10 87	6	4
Amherst,	2-82	5 30	6	10
Washington,	11-02	4 05	7	—
Ashford,	1-86	8 98	6	14
Marlborough,	2-29	5 87	7	2
Northampton,	8-55	6 89	6	10
Pittsfield,	11-03	6 06	4	13
Southampton,	2-27	7 71	9	2
Westfield,	1-45	8 74	6	17
Windsor,	2-40	4 48	5	14
Worcester,	2-24	3 50	6	—
Worcester,	3-78	9 62	7	15
Worcester,	1-51	10 18	8	10
Worcester,	2-51	5 88	6	8
Worcester,	2-61	4 79	5	17
Worcester,	2-15	4 85	7	4
Worcester,	2-68	6 83	8	—
Worcester,	2-69	5 56	5	16
Average,	\$.002-45	\$7 80	7	10

BRISTOL COUNTY.

			Mos.	Days
Adams,	\$.003-83	\$8 47	8	—
Amherst,	3-83	8 66	8	4
Amherst,	3-78	8 11	6	18
Amherst,	2-89	7 08	7	9
Amherst,	3-58	8 45	7	6
Amherst,	11-01	8 46	8	5
Amherst,	3-96	10 68	9	18
Amherst,	1-58	7 93	10	15
Amherst,	2-80	5 56	8	12
Amherst,	2-83	5 18	6	8
Amherst,	11-34	14 28	10	3
Amherst,	2-61	6 69	7	3
Amherst,	1-83	6 29	7	—
Amherst,	11-02	8 48	6	—
Amherst,	1-93	6 59	6	8
Amherst,	2-85	6 87	7	17
Amherst,	3-12	8 12	5	16
Amherst,	1-86	8 66	9	7
Amherst,	11-02	8 21	7	15
Average,	\$.002-13	\$9 20	8	18

DUKES COUNTY.

CITY OR TOWN.	Number of mills to the dollar appropriated to public schools, on the valuation of 1871.	Expended for each child between 5 and 15 years of age, 1870-71.	Average length of schools in 1870-71.
Chilmark,	\$.001-88	\$5 23	6
Edgartown,	1-61	6 19	7
Gay Head,	-	-	7
Gosnold,	0-74	6 58	6
Tisbury,	3-51	6 98	6
Average,	\$.002-00	\$6 40	6

ESSEX COUNTY.

Amesbury,	\$.002-94	\$6 89	6
Andover,	3-83	13 92	8
Beverly,	2-14	9 44	10
Boxford,	1-43	7 63	8
Bradford,	4-18	11 33	10
Danvers,	3-25	8 26	9
Essex,	2-89	6 72	7
Georgetown,	4-31	9 37	8
Gloucester,	1-80	9 37	9
Groveland,	2-47	6 90	9
Hamilton,	2-09	7 69	7
Haverhill,	2-77	12 24	7
Ipswich,	2-65	7 69	9
Lawrence,	2-48	9 50	10
Lynn,	2-23	9 21	10
Lynnfield,	1-83	9 68	9
Manchester,	2-26	9 40	10
Marblehead,	3-18	7 61	10
Methuen,	2-85	10 81	9
Middleton,	3-82	7 80	9
Nahant,	0-28	17 89	11
Newbury,	2-03	6 48	7
Newburyport,	3-38	9 79	10
North Andover,	3-03	11 63	9
Peabody,	3-65	13 19	9
Rockport,	3-10	6 21	8
Rowley,	2-24	5 61	7
Salem,	2-16	9 29	10
Salisbury,	2-79	6 90	8
Saugus,	2-58	8 82	10
Swampscott,	2-61	15 94	10
Topshfield,	2-10	6 88	8
Wenham,	3-88	9 64	8
West Newbury,	2-83	6 76	11
Average,	\$.002-57	\$9 44	9

FRANKLIN COUNTY.

CITY OR TOWN.	Number of mills to the dollar appro- priated to public schools, on the valuation of 1871	Expended for each child between 5 and 15 years of age, 1870-71.	Average length of schools in 1870-71.	
			Mos.	Days
Beld,	\$0.008-75	\$9 85	5	14
Hardston,	1-70	4 81	6	18
Kland,	2-57	4 09	6	6
Mont,	8-21	6 22	5	12
rairie,	2-85	6 89	7	8
way,	8-01	9 22	5	19
rfield,	8-91	8 19	6	16
ing,	8-34	10 04	7	9
.	1-50	5 74	6	5
enfield,	8-33	11 18	8	15
rley,	5-19	6 92	6	-
th,	8-89	9 09	6	-
erett,	2-86	6 85	7	1
den,	2-61	5 22	6	-
roe,	4-97	6 39	7	-
atague,	2-21	5 80	6	-
r Salem,	4-48	9 49	7	-
thfield,	3-58	6 58	6	11
nge,	2-25	6 30	5	18
re,	4-46	5 84	6	-
burne,	2-90	7 12	6	16
tesbury,	4-98	9 17	6	8
derland,	3-22	9 09	8	-
rick,	5-30	10 12	6	10
ndell,	8-98	10 12	6	8
ately,	1-79	7 78	6	9
Average,	\$0.008-08	\$7 58	6	9

HAMPDEN COUNTY.

wam,	\$0.001-96	\$5 15	7	9
ndford,	1-89	4 88	6	9
nfield,	2-79	8 26	7	10
ster,	4-02	8 30	6	7
opes,	4-35	10 43	9	8
nville,	4-18	8 37	6	1
and,	2-65	4 76	6	-
yoke,	2-81	9 64	9	8
gmeadow,	3-26	11 74	8	7
low,	2-46	5 15	6	-
son,	3-31	7 86	6	-
atgomery,	4-57	10 75	6	-
ner,	3-74	6 44	7	1
sell,	1-01	7 35	6	-

HAMPDEN COUNTY--CONTINUED.

CITY OR TOWN.	Number of mills to the dollar appro- priated to public schools, on the valuation of 1871.	Expended for each child between 5 and 15 years of age, 1870-71.	Average length of schools in 1870-71.	
			No.	Days
Northwick,	\$.001-51	\$4 09	7	9
Springfield,	2-45	16 00	10	-
Walden,	2-03	5 50	6	8
Wales,	1-91	5 18	6	8
Westfield,	3-04	14 59	9	0
West Springfield,	3-02	18 92	9	2
Wilbraham,	2-12	5 98	6	18
Average,	\$.002-80	\$11 34	8	6

HAMPSHIRE COUNTY.

			No.	Days
Norberst,	\$.002-84	\$12 10	8	6
Northchertown,	4-64	11 11	6	8
Northesterfield,	2-61	6 49	6	14
Northmmington,	3-00	5 45	6	5
Northsthampton,	2-40	7 81	9	8
Northfield,	2-41	9 93	6	16
Northshen,	2-41	7 14	6	17
Northanby,	3-82	12 26	7	10
Northeenwich,	3-86	9 70	6	1
Northdley,	2-35	7 75	7	12
Northtfield,	2-04	6 64	7	13
Northntington,	2-57	6 25	6	8
Northddlefield,	2-18	6 76	6	-
Northrthampton,	3-50	12 39	9	18
Northlham,	4-82	7 75	6	-
Northinfield,	2-02	7 45	6	-
Northescott,	4-20	10 17	6	-
Northth Hadley,	3-44	9 67	8	14
Northsthampton,	3-46	8 29	7	18
Northre,	4-82	8 38	7	14
Northsthampton,	4-20	10 58	7	15
Northliamsburg,	2-20	5 68	8	6
Northrthington,	2-75	5 98	6	9
Average,	\$.003-14	\$9 33	7	16

MIDDLESEX COUNTY.

			No.	Days
Northon,	\$.002-40	\$7 94	6	19
Northington,	2-76	16 97	10	10
Northby,	2-44	6 00	5	19

MIDDLESEX COUNTY—CONTINUED.

CITY OR TOWN.	Number of miles to the dollar appropriated to public schools, on the valuation of 1871.	Expended for each child between 5 and 15 years of age, 1870-71.	Average length of schools in 1870-71.
			Mon. Days.
d,	\$ 008-10	\$10 15	7 18
d,	2-21	8 46	7 16
it,	1-79	22 53	10 -
a,	1-79	7 32	7 16
rough,	1-92	10 88	6 10
n,	1-92	20 31	10 5
ton,	2-21	10 68	6 4
dge,	2-36	13 72	10 -
,	2-19	7 89	6 -
town,	2-88	14 81	10 10
ford,	1-93	6 51	6 17
d,	2-52	12 59	9 6
,	2-76	7 83	6 8
ble,	2-76	9 41	6 10
,	3-88	14 85	10 10
gham,	3-78	16 66	8 11
,	3-41	8 01	7 5
n,	3-41	9 02	8 8
ton,	4-45	8 36	8 5
,	3-59	7 38	8 8
ton,	3-01	21 21	9 14
,	2-57	11 48	8 5
n,	2-35	8 83	6 19
,	3-15	13 65	10 10
,	2-66	13 41	10 5
rough,	5-09	8 52	8 17
d,	3-17	17 67	10 8
,	2-91	12 77	10 -
,	3-82	8 83	8 7
,	2-78	22 63	9 12
Reading,	2-73	7 66	7 15
ell,	1-39	4 29	6 00
g,	3-78	12 80	9 2
rn,	2-26	9 57	7 3
,	2-38	6 53	6 -
ille,	2-90	18 07	10 10
am,	2-81	11 07	9 8
,	2-81	5 17	8 -
y,	2-09	7 39	8 4
bury,	1-98	7 84	8 15
nd,	4-09	8 06	6 -
orough,	3-47	9 81	4 16
eld,	2-64	10 18	10 -
m,	3-18	17 77	10 1
own,	2-50	15 98	9 -
nd,	3-17	8 44	8 8
rd,	2-62	7 11	8 -

MIDDLESEX COUNTY—CONCLUDED.

CITY OR TOWN.	Number of mills to the dollar appro- priated to public schools, on the valuation of 1871.	Expended for each child between 5 and 15 years of age, 1870-71.	Mon. Average length of year.
Weston,	\$ 002-65	\$15 98	9
Wilmington,	2-07	7 12	8
Winchester,	2-64	15 20	9
Woburn,	2-48	10 47	9
Average,	\$.002-78	\$18 17	8

NANTUCKET COUNTY.

Nantucket,	\$ 004-89	\$12 21	10
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NORFOLK COUNTY.

Bellingham,	\$.003-84	\$9 91	7
Braintree,	3-02	6 81	8
Brookline,	1-86	25 83	10
Canton,	8-11	8 56	9
Cohasset,	2-11	8 77	10
Dedham,	3-80	13 54	10
Dover,	2-49	7 84	8
Foxborough,	3-01	8 63	8
Franklin,	2-52	7 89	7
Hyde Park,	2-52	15 79	10
Medfield,	1-50	6 43	6
Medway,	3-68	9 17	7
Milton,	1-99	21 46	9
Needham,	3-33	14 51	9
Norfolk,	4-40	9 01	7
Quincy,	3-29	11 44	10
Randolph,	5-04	7 21	9
Sharon,	1-86	5 96	9
Stoughton,	3-81	7 09	8
Walpole,	3-80	11 39	8
West Roxbury,	2-11	18 40	10
Weymouth,	4-11	10 51	9
Wrentham,	3-62	9 84	7
Average,	\$.002-52	\$12 04	9

PLYMOUTH COUNTY.

Abington,	\$.003-34	\$8 56	8
Bridgewater,	4-23	11 54	8

PLYMOUTH COUNTY—CONTINUED.

CITY OR TOWN	Number of mills to the dollar appropriated to public schools, on the valuation of 1871.	Expended for each child between 5 and 18 years of age, 1876-77.	Average length of schools in 1876-77.	
			Mon.	Days.
Acushnet,	\$.002-11	\$5 67	6	6
Barnstable,	1-93	4 80	7	19
Bridgewater,	4-13	8 64	8	17
Brockton,	8-17	8 47	6	15
Dorchester,	3-22	8 88	9	—
Easton,	3-27	7 21	7	14
Falmouth,	2-26	8 27	10	15
Marblehead,	1-22	8 54	9	—
Mattapoisett,	2-89	10 64	9	5
Middleboro,	3-50	8 24	6	—
Milford,	2-89	5 21	6	5
Norfolk,	8-00	7 80	8	10
North Attleboro,	2-24	4 35	6	—
North Scituate,	3-24	7 07	8	4
North Weymouth,	4-02	8 97	8	10
Quincy,	3-18	6 52	8	10
Roslindale,	4-50	12 70	9	9
South Scituate,	3-08	5 29	6	9
Wareham,	2-42	6 38	7	7
Weymouth,	2-77	6 21	9	10
Weymouth Neck,	2-34	6 87	9	11
Weymouth Falls,	4-00	6 40	6	14
Weymouth Heights,	3-92	7 96	8	—
Average,	\$.008-34	\$7 99	8	5

SUFFOLK COUNTY.

Acushnet,	\$.001-48	\$19 57	10	16
Barnstable,	3-19	—	10	10
Brockton,	2-54	14 12	10	10
Dorchester,	2-81	11 29	8	8
Average,	\$.001-52	\$19 16	10	14

WORCESTER COUNTY.

Amherst,	\$.003-07	\$7 41	6	5
Belmont,	1-95	7 89	7	12
Brookfield,	2-35	5 38	6	2
Brookline,	2-31	9 51	6	17
Cambridge,	2-40	4 57	6	15

* Including Roxbury and Dorchester.

WORCESTER COUNTY—CONTINUED.

CITY OR TOWN.	Number of mills to the dollar appro- priated to public schools, on the valuation of 1871.	Expended for each child between 5 and 15 years of age, 1870-71.
Blackstone,	\$.008-08	\$6 47
Bolton,	2-25	6 82
Boylston,	2-82	7 79
Brookfield,	3-50	9 01
Charlton,	3-06	9 97
Clinton,	2-74	7 82
Dana,	3-68	6 62
Douglas,	3-67	6 43
Dudley,	4-81	7 02
Fitchburg,	1-90	9 98
Gardner,	2-11	6 86
Grafton,	3-99	7 20
Hardwick,	2-89	8 04
Harvard,	2-64	8 57
Holden,	2-80	7 46
Hubbardston,	2-74	8 90
Lancaster,	1-92	18 12
Leicester,	2-50	10 27
Leominster,	2-84	10 87
Lunenburg,	3-18	11 80
Mendon,	2-67	6 85
Milford,	3-34	6 68
Millbury,	3-12	6 19
New Braintree,	11-01	11 81
Northborough,	2-48	11 29
Northbridge,	3-18	6 48
North Brookfield,	2-93	6 86
Oakham,	3-45	8 44
Oxford,	3-66	8 21
Paxton,	2-40	6 67
Petersham,	2-46	7 56
Phillipston,	3-46	6 29
Princeton,	1-90	7 47
Royalston,	11-01	6 17
Rutland,	3-13	6 70
Shrewsbury,	2-40	9 12
Southborough,	11-26	9 70
Southbridge,	3-11	6 87
Spencer,	2-26	6 18
Sterling,	1-80	6 71
Sturbridge,	2-22	7 01
Sutton,	2-90	6 55
Templeton,	11-41	7 72
Upton,	3-40	7 83
Uxbridge,	2-94	8 06
Warren,	3-15	9 18
Webster,	2-82	5 86

WORCESTER COUNTY—CONCLUDED.

CITY OR TOWN.	Number of mills to the dollar appro- priated to public schools, on the valuation of 1871.	Expended for each child between 5 and 15 years of age, 1870-71.	Average length of schools in 1870-71.	
			Mos.	Days.
Agg,	\$.002-93	\$8 56	7	12
Amherst,	2-94	5 45	7	-
Belknap,	3-20	6 74	7	6
Belmont,	3-29	9 72	6	-
Brookfield,	2-77	8 06	6	9
Concord,	2-58	12 84	10	5
Agg,	\$.002-65	\$8 73	7	8
Average for State,	\$.002-19	\$11 78	8	9

[C.]

Showing, 1st, the valuation of each town in the Commonwealth the year 1871; 2d, the amount of a half mill tax on such valuation; 3d, the amount to be received by each town on a distribution of the avails of said tax in proportion to the number of persons between 5 and 15 years, according to the returns of 1870-1.

BARNSTABLE COUNTY.

CITY OR TOWN.	Valuation—1871.	Amount of a half mill tax.	Amount received by Town.	Amount
Barnstable, . .	\$2,450,510 00	\$1,225 25	\$2,380 65	\$1,225 25
Brewster, . . .	661,890 00	330 94	710 16	330 94
Chatham, . . .	848,162 00	424 08	1,460 67	424 08
Dennis,	1,299,988 00	649 99	2,022 88	649 99
Eastham, . . .	188,177 00	94 08	317 42	94 08
Falmouth, . . .	1,096,788 00	548 39	1,092 14	548 39
Harwich,	1,070,850 00	535 42	2,178 90	535 42
Mashpee,	101,907 00	50 65	156 02	50 65
Orleans,	444,624 00	222 31	642 91	222 31
Provincetown, .	1,876,173 00	938 08	1,982 53	938 08
Sandwich, . . .	1,305,750 00	652 87	1,977 15	652 87
Truro,	272,131 00	136 06	879 63	136 06
Wellfleet, . . .	888,516 00	419 25	1,140 56	419 25
Yarmouth, . . .	1,384,746 00	692 37	997 99	692 37
Total,	\$13,839,612 00	\$6,919 74	\$17,989 61	\$13,839,612 00

BERKSHIRE COUNTY.

Adams,	\$5,869,256 00	\$2,934 62	\$5,783 88	\$2,934 62
Alford,	296,321 00	148 16	215 20	148 16
Becket,	489,895 00	244 94	887 70	244 94
Cheshire,	874,485 00	437 24	973 78	437 24
Clarksburg, . . .	244,857 00	122 42	379 29	122 42
Dalton,	938,632 00	469 31	648 29	469 31
Egremont,	590,061 00	295 04	470 75	295 04
Florida,	205,037 00	102 51	508 41	102 51
Gt. Barrington, .	5,125,484 00	2,562 74	2,491 76	2,562 74
Hancock,	480,793 00	240 39	406 19	240 39
Hinsdale,	855,479 00	427 78	876 94	427 78
Lanesborough, . .	766,776 00	388 38	850 04	388 38
Lee,	1,666,141 00	833 07	2,469 42	833 07
Lenox,	1,252,823 00	626 41	742 44	626 41
Monterey,	282,858 00	141 42	406 19	141 42
Mt. Washington, .	99,330 00	49 66	199 06	49 66

* Loss.

BERKSHIRE COUNTY—CONTINUED.

TOWN.	Valuation—1921.	Amount of a half mill tax.	Amount received by Town.	Amount of Gain.
ord,	\$110,495 00	\$55 24	\$139 88	\$84 64
rough,	872,819 00	438 40	2,016 82	1,580 42
.	837,227 00	168 61	532 62	364 01
.	197,782 00	98 89	266 81	167 42
.	8,541,253 00	4,270 62	6,770 73	2,500 11
.	551,414 00	275 70	575 66	299 96
.	541,272 00	270 68	780 10	509 47
.	282,586 00	141 29	486 80	345 60
.	1,205,560 00	602 78	1,307 84	704 56
ge,	2,582,545 00	1,291 27	1,080 27	261 00*
n,	278,261 00	139 13	320 11	180 98
on,	805,699 00	152 84	449 26	296 42
bridge,	929,346 00	464 67	1,108 28	648 61
own,	1,674,595 00	837 29	1,772 71	985 42
.	297,053 00	148 52	387 86	238 84
.	\$38,746,155 00	\$19,372 97	\$36,198 68	\$17,217 69

BRISTOL COUNTY.

.	\$600,600 00	\$300 80	\$684 84	\$334 54
ugh,	2,848,258 00	1,424 22	3,260 28	1,836 06
.	317,268 00	158 63	398 12	239 49
n,	1,880,750 00	940 37	1,721 60	781 23
.	697,000 00	348 50	796 24	447 74
.	2,121,147 00	1,060 57	2,098 20	1,037 63
.	1,385,788 00	692 89	1,385 85	692 46
.	29,141,117 00	14,570 55	15,674 63	1,104 08
.	650,480 00	325 24	726 80	401 06
.	850,098 00	425 04	1,248 16	823 12
ord,	22,960,251 00	11,480 12	10,160 13	1,319 99*
.	765,625 00	382 81	804 31	421 50
.	1,577,023 00†	788 51	898 46	109 95
.	795,148 00	397 57	887 70	490 13
.	618,730 00	309 36	489 58	180 22
.	883,163 00	441 58	1,065 24	623 66
.	660,225 00	330 11	683 26	358 15
.	16,104,869 00	8,052 43	9,336 99	1,284 56
.	1,383,900 00	691 95	1,474 12	782 17
.	\$36,241,440 00	\$43,120 75	\$58,743 51	\$11,942 75

DUKES COUNTY.

.	\$292,013 00	\$146 00	\$282 45	\$186 45
n,	1,234,950 00	617 47	866 87	251 40

—Total loss for Berkshire County, \$361.98. Total loss for Bristol County, \$1,319.99.
 tion of Raynham erroneous by a mistake in the returns of the assessors.

DUKES COUNTY—CONTINUED.

CITY OR TOWN.	Valuation—1871.	Amount of a half mill tax.	Amount received by Town.	Amount
Gay Head, . .	\$11,014 00	\$5 50	\$107 60	
Gosnold, . .	167,758 00	88 87	51 11	
Tisbury, . .	626,150 00	818 07	847 85	
Total, . .	\$2,881,888 00	\$1,165 91	\$2,157 88	\$

ESSEX COUNTY.

Amesbury, . .	\$2,240,461 00	\$1,120 23	\$2,577 02	\$
Andover, . .	2,498,246 00	1,249 12	1,850 72	
Beverly, . .	5,703,310 00	2,851 65	8,418 99	
Boxford, . .	835,250 00	417 62	443 85	
Bradford, . .	1,088,715 00	544 35	1,067 98	
Danvers, . .	2,953,100 00	1,476 55	3,222 62	
Essex, . .	862,838 00	431 41	1,000 68	
Georgetown, . .	903,875 00	451 68	1,119 04	
Gloucester, . .	7,487,255 00	3,743 62	8,882 04	
Groveland, . .	798,398 00	399 19	903 84	
Hamilton, . .	476,895 00	238 44	849 70	
Haverhill, . .	9,375,800 00	4,687 90	5,826 54	
Ipswich, . .	1,658,058 00	828 02	1,538 68	
Lawrence, . .	18,551,848 00	9,275 92	18,035 74	
Lynn, . .	24,385,626 00	12,192 81	15,881 76	
Lynnfield, . .	652,708 00	326 35	883 56	
Manchester, . .	1,236,448 00	618 22	801 62	
Marblehead, . .	8,454,650 00	1,727 32	3,687 05	
Methuen, . .	1,924,750 00	962 37	1,417 63	
Middleton, . .	442,695 00	221 34	626 77	
Nahant, . .	5,883,183 00	2,941 59	255 55	
Newbury, . .	686,447 00	343 22	581 04	
Newburyport, . .	7,091,756 00	3,545 87	6,595 88	
North Andover, . .	1,975,526 00	987 76	1,888 04	
Peabody, . .	5,195,600 00	2,597 80	3,878 60	
Rockport, . .	1,600,820 00	800 41	2,197 73	
Rowley, . .	585,828 00	267 81	575 66	
Salem, . .	22,932,925 00	11,466 46	14,864 60	
Salisbury, . .	1,768,313 00	884 15	1,995 98	
Saugus, . .	1,500,845 00	750 42	1,253 54	
Swampscott, . .	2,102,873 00	1,051 43	928 05	
Topsfield, . .	712,288 00	356 14	687 53	
Wenham, . .	472,475 00	236 28	446 54	
West Newbury, . .	1,028,497 00	514 24	1,159 89	
Total, . .	\$141,015,586 00	\$70,507 64	\$103,938 91	\$3

* Loss.—Total loss for Dukes County, \$22.76. Total loss for Essex County, \$2,800.

FRANKLIN COUNTY.

TOWN.	Valuation—1871.	Amount of a half mill tax.	Amount received by Town.	Amount of Gain.
...	\$532,632 00	\$266 31	\$575 66	\$100 00
ton,	424,557 00	212 27	419 64	207 37
d,	581,828 00	290 91	1,073 31	782 40
ont,	373,335 00	186 66	519 17	332 51
a,	699,529 00	349 76	841 97	492 21
...	830,189 00	415 09	728 99	313 90
...	1,258,643 00	629 32	1,619 38	990 06
...	295,891 00	147 94	282 45	134 51
...	465,979 00	232 98	328 18	95 20
ld,	2,187,943 00	1,093 97	1,756 57	662 60
...	178,259 00	86 62	349 70	263 08
...	256,568 00	128 26	295 90	167 62
...	348,935 00	174 46	392 74	218 28
...	229,284 00	114 64	309 35	194 71
...	50,216 00	25 10	110 29	85 19
a,	1,128,111 00	564 05	1,159 39	595 34
em,	334,316 00	167 15	425 02	257 87
d,	707,945 00	353 97	1,022 20	668 23
...	1,102,980 00	551 49	1,067 93	516 44
...	178,951 00	89 47	368 53	279 06
e,	861,619 00	430 80	944 19	513 39
ry,	200,490 00	100 24	293 21	192 97
nd,	465,232 00	232 61	448 85	211 24
...	226,307 00	113 15	383 56	220 41
...	200,768 00	100 38	212 51	112 13
...	723,087 00	361 54	449 23	87 69
...	\$14,838,594 00	\$7,419 16	\$16,322 92	\$8,903 76

HAMPDEN COUNTY.

...	\$940,348 00	\$470 27	\$965 71	\$495 44
d,	528,620 00	264 31	602 56	338 25
d,	648,258 00	324 62	586 42	264 80
...	496,282 00	248 14	648 29	400 15
...	4,064,782 00	2,032 39	4,745 16	2,712 77
a,	463,931 00	231 96	616 01	384 05
...	150,504 00	75 25	225 96	150 71
...	6,640,385 00	3,320 19	5,218 60	1,898 41
ldow,	918,155 00	459 07	718 23	259 16
...	494,650 00	247 32	626 77	379 45
...	1,207,596 00	603 79	1,457 98	854 19
ery,	152,800 00	76 40	185 61	109 21
...	1,335,094 00	667 54	2,087 44	1,419 90
...	274,989 00	137 49	365 84	228 35
k,	598,620 00	299 31	653 67	356 36
ld,	27,551,970 00	13,775 98	11,384 08	2,391 90*
...	294,502 00	147 25	309 35	162 10

HAMPDEN COUNTY—CONTINUED.

CITY OR TOWN.	Valuation—1971.	Amount of a half mill tax.	Amount received by Town.	Amount
Wales, . . .	\$366,486 00	\$183 24	\$363 15	•
Westfield, . . .	5,412,819 00	2,706 40	3,042 89	
W. Springfield, . . .	1,983,978 00	991 98	1,159 39	
Wilbraham, . . .	843,885 00	421 94	1,124 42	
Total, . . .	\$55,358,654 00	\$27,679 34	\$37,087 08	\$11.

HAMPSHIRE COUNTY.

Amherst, . . .	\$2,813,464 00	\$1,406 73	\$1,778 09	•
Belchertown, . . .	1,076,676 00	538 33	1,210 50	
Chesterfield, . . .	882,574 00	191 28	414 26	
Cummington, . . .	398,864 00	199 43	591 80	
Easthampton, . . .	2,495,771 10	1,247 83	2,065 92	
Enfield, . . .	620,125 00	310 06	408 19	
Goshen, . . .	148,000 00	71 50	188 30	
Granby, . . .	501,108 00	250 55	422 33	
Greenwich, . . .	297,455 00	148 72	277 07	
Hadley, . . .	1,400,144 00	700 07	1,145 94	
Hatfield, . . .	1,222,982 00	611 49	1,011 44	
Huntington, . . .	544,484 00	272 24	602 56	
Middlefield, . . .	421,510 00	210 75	462 68	
Northampton, . . .	6,868,433 00	3,434 21	5,226 67	1.
Pelham, . . .	207,360 00	103 68	347 01	
Plainfield, . . .	229,260 00	114 63	222 00 222 00	
Prescott, . . .	213,798 00	106 89	247 48	
South Hadley, . . .	1,451,847 00	725 94	1,433 77	
Southampton, . . .	533,329 00	200 00 200 00	599 87	
Ware, . . .	1,618,880 00	809 44	2,305 33	1.
Westhampton, . . .	342,400 00	171 20	555 53 555 53	
Williamsburg, . . .	1,357,826 00	678 91	1,420 82	
Worthington, . . .	362,765 00	181 38	529 93	
Total, . . .	\$25,504,050 00	\$12,751 97	\$23,308 85	\$10.

MIDDLESEX COUNTY.

Acton, . . .	\$968,317 00	\$484 05	\$817 76	•
Arlington, . . .	4,148,440 00	2,074 22	1,815 75	
Ashby, . . .	496,760 00	248 39	538 10	
Ashland, . . .	1,288,732 00	644 36	1,059 86	
Ayer, ¹ . . .	—	—	—	
Bedford, . . .	587,337 00	293 66	485 78	
Belmont, . . .	2,431,166 00	1,215 58	794 87	
Billerica, . . .	1,446,168 00	723 07	954 95	
Boxborough, . . .	247,214 00	123 60	185 61	

• Less.—Total less for Hampden County, \$2,391.90.

¹ Included in Gr

MIDDLESEX COUNTY—CONTINUED.

CITY OR TOWN.	Valuation—1971.	Amount of a half mill tax.	Amount received by Town.	Amount of Gain.
Brighton, . .	\$8,954,732 00	\$4,477 86	\$2,278 43	\$2,198 93*
Burlington, . .	497,878 00	248 88	277 07	28 24
Conbridge, . .	46,859,800 00	23,429 90	21,751 84	1,678 56*
Dorchester, . .	887,574 00	193 78	309 85	115 57
Dorchester, . .	81,866,660 00	15,933 83	16,357 89	424 56
Elmsford, . .	1,551,233 00	775 61	1,240 09	464 48
Exeter, . .	2,094,025 00	1,047 01	1,132 49	85 48
Exeter, . .	1,343,997 00	671 99	1,080 27	358 28
Exeter, . .	289,407 00	144 70	228 65	83 95
Exeter, . .	2,423,232 00	1,211 61	1,162 08	49 53*
Framingham, . .	8,661,570 00	1,830 78	2,001 36	170 58
Franklin, . .	2,482,730 00	1,241 86	2,014 81	773 45
Franklin, . .	1,759,122 00	879 56	1,788 85	909 29
Franklin, . .	2,020,882 00	1,010 44	2,894 44	1,884 00
Franklin, . .	1,392,741 00	696 87	1,821 18	1,124 78
Franklin, . .	2,324,754 00	1,162 87	887 70	274 67*
Franklin, . .	659,082 00	329 54	398 12	68 58
Franklin, . .	728,175 00	361 58	548 76	187 18
Franklin, . .	27,811,358 00	18,905 67	17,315 58	3,409 86
Franklin, . .	7,119,058 00	3,559 52	3,811 72	252 20
Franklin, . .	8,141,581 00	1,570 76	5,049 13	3,478 87
Franklin, . .	—	—	—	—
Franklin, . .	6,351,399 00	3,175 69	3,004 73	170 96*
Franklin, . .	2,812,756 00	1,406 87	2,726 98	1,320 61
Franklin, . .	3,114,300 00	1,552 15	3,841 82	2,289 17
Franklin, . .	10,386,018 00	9,693 00	6,418 34	3,274 66*
Franklin, . .	512,736 00	256 86	478 82	222 46
Franklin, . .	1,111,415 00	555 70	968 40	412 70
Franklin, . .	1,850,658 00	925 32	1,471 43	546 11
Franklin, . .	882,325 00	441 16	562 21	121 05
Franklin, . .	840,087 00	420 01	823 14	403 18
Franklin, . .	15,775,000 00	7,867 50	6,913 30	974 20*
Franklin, . .	2,485,110 00	1,242 55	2,125 10	382 55
Franklin, . .	764,539 00	382 16	1,041 03	658 87
Franklin, . .	989,290 00	469 64	1,019 51	549 87
Franklin, . .	908,415 00	454 20	650 98	196 78
Franklin, . .	782,481 00	366 21	1,000 68	634 47
Franklin, . .	301,918 00	150 95	287 83	136 88
Franklin, . .	2,890,746 00	1,415 87	1,982 58	567 16
Franklin, . .	7,914,660 00	3,957 33	3,819 80	137 53*
Franklin, . .	5,598,140 00	2,799 07	2,356 44	442 63*
Franklin, . .	629,714 00	314 85	637 53	322 68
Franklin, . .	952,778 00	476 88	989 92	513 54
Franklin, . .	1,178,450 00	589 22	527 24	61 98*
Franklin, . .	518,509 00	259 25	406 19	146 94
Franklin, . .	3,404,626 00	1,702 31	1,592 48	109 83*
Franklin, . .	7,780,398 00	3,890 19	4,960 86	1,070 17
Total, . .	\$251,556,838 00	\$125,271 94	\$141,447 58	\$26,288 80

* Loss.—Total loss for Middlesex County, \$9,570 53.

† Included in other Towns.

NANTUCKET COUNTY.

CITY OR TOWN.	Valuation—1871.	Amount of a half mill tax.	Amount received by Town.	Amount
Nantucket, . .	\$1,822,428 00	\$911 21	\$1,761 95	\$

NORFOLK COUNTY.

Bellingham, . .	\$520,820 00	\$260 41	\$581 04	\$
Braintree, . .	1,983,950 00	991 97	2,369 89	1,
Brookline, . .	20,879,700 00	10,439 85	2,967 07	7,
Canton, . . .	2,568,795 00	1,284 39	2,515 15	1,
Cohasset, . . .	1,895,578 00	947 78	1,226 64	
Dedham, . . .	5,816,837 00	2,908 41	3,817 11	
Dover,	360,788 00	180 39	357 77	
Foxborough, . .	1,496,509 00	748 25	1,460 67	
Franklin, . . .	1,586,400 00	793 20	1,863 83	
Hyde Park, . .	5,955,925 00	2,977 96	2,555 50	
Medfield, . . .	791,528 00	395 76	594 49	
Medway, . . .	1,492,570 00	746 28	1,614 00	
Milton,	5,029,400 00	2,514 70	1,253 54	1,
Needham, . . .	3,001,530 00	1,500 76	1,853 42	
Norfolk, . . .	454,057 00	227 02	597 18	
Quincy,	5,845,600 00	2,672 80	4,131 84	1,
Randolph, . . .	1,985,970 00	992 98	3,728 34	2,
Sharon,	804,374 00	402 18	798 93	
Stoughton, . .	2,410,475 00	1,205 23	3,034 82	1,
Walpole, . . .	1,165,159 00	592 57	1,062 55	
West Roxbury, .	14,226,300 00	7,113 15	4,384 70	2,
Weymouth, . .	4,866,000 00	2,433 00	5,119 07	2,
Wrentham, . . .	1,104,602 00	552 80	1,153 96	
Total,	\$85,762,867 00	\$42,881 84	\$48,541 01	\$17,

PLYMOUTH COUNTY.

Abington, . . .	\$4,186,109 00	\$2,093 05	\$5,743 15	\$3,
Bridgewater, . .	1,843,029 00	921 51	1,818 44	
Carver,	520,417 00	260 20	521 86	
Duxbury, . . .	1,034,000 00	517 00	1,121 73	
E Bridgewater, .	1,211,050 00	605 52	1,557 51	
Halifax,	315,346 00	157 67	817 42	
Hanover,	888,719 00	419 35	866 18	
Hanson,	456,221 00	229 11	559 52	
Hingham, . . .	2,871,279 00	1,435 63	2,108 96	
Hull,	286,067 00	143 04	110 29	
Kingston, . . .	1,036,421 00	518 21	777 41	
Lakeville, . . .	482,733 00	241 36	551 45	
Marion,	418,033 00	209 01	516 46	
Marshfield, . .	767,716 00	383 85	793 55	

* Loss.—Total loss for Norfolk County, \$11,834.85.

PLYMOUTH COUNTY—CONTINUED.

TOWN.	Valuation—1871.	Amount of a half mill tax.	Amount received by Town.	Amount of Gain.
Acushnet,	\$535,148 00	\$267 57	\$742 44	\$474 87
Barnstable,	2,159,770 00	1,079 88	2,663 10	1,583 22
Beverly,	3,543,719 00	1,771 85	4,271 91	2,500 06
Carver,	566,120 00	283 06	742 44	459 38
Dartmouth,	8,228,800 00	1,611 90	3,071 98	1,460 08
Marblehead,	292,459 00	146 22	457 80	311 08
Mattapoisett,	496,520 00	248 26	505 72	257 46
Milford,	1,047,447 00	523 72	1,256 28	782 51
Norfolk,	852,632 00	426 81	782 79	356 48
Orleans,	998,950 00	499 47	1,681 25	1,181 78
Plymouth,	765,838 00	382 61	1,014 18	631 52
Total	\$30,751,063 00	\$15,375 86	\$34,553 24	\$19,210 63

SUFFOLK COUNTY.

Acushnet,	\$612,663,550 00	\$306,831 77	\$124,549 69	\$181,782 08*
Barnstable,	18,844,940 00	6,672 47	8,355 14	1,682 67
Beverly,	1,068,500 00	531 75	865 84	165 91*
Carver,	604,584 00	302 29	338 56	31 27
Total	\$627,676,574 00	\$318,836 28	\$133,604 28	\$1,713 94

WORCESTER COUNTY.

Acushnet,	\$976,258 00	\$488 12	\$1,089 45	\$601 33
Barnstable,	2,341,435 00	1,170 71	1,557 51	386 80
Beverly,	509,605 00	254 80	599 87	345 07
Carver,	1,754,468 00	877 28	1,145 94	268 71
Dartmouth,	416,200 00	208 10	589 11	381 01
Marblehead,	2,142,215 00	1,071 10	2,802 98	1,781 88
Mattapoisett,	584,221 00	267 11	473 44	206 33
Milford,	516,900 00	258 45	414 26	155 81
Norfolk,	1,118,924 00	556 96	1,164 77	607 81
Orleans,	980,850 00	490 42	509 89	319 27
Plymouth,	8,045,670 00	1,522 83	2,875 61	1,352 78
Worcester,	271,869 00	135 93	406 19	270 26
Worcester,	952,727 00	476 36	1,116 85	110 09
Worcester,	975,009 00	487 50	1,608 62	1,121 12
Worcester,	11,087,361 00	5,533 68	5,662 45	128 77
Worcester,	1,799,249 00	899 72	1,748 12	843 50
Worcester,	1,704,500 00	852 25	2,542 05	1,689 80
Worcester,	1,085,330 00	517 66	1,035 65	517 99
Worcester,	909,509 00	454 75	753 20	298 45
Worcester,	968,155 00	481 57	978 78	492 21
Worcester,	913,847 00	456 92	755 89	298 97

*Total loss for Plymouth County, \$62.75. Total loss for Suffolk County, \$181,947.99.

A B S T R A C T

OF

SCHOOL COMMITTEES' REPORTS.

ABSTRACTS.

BARNSTABLE COUNTY.

BARNSTABLE.

Few practical suggestions to parents and teachers seem to be called for. Few deny the right or expediency of a compulsory support of education. But there are too many who deny the right to compel attendance. The exercise of the former power is comparatively useless without the exercise of the latter. The same law of public necessity exists in both cases. The want of punctuality which reduces the average attendance to 75 per cent. or less, as in some of the schools, is an evil which demands the utmost rigor of the law. Nothing but sickness should be an excuse. Absenteeism takes the scholar from his books, retards his progress, subjects the teacher to additional labor, and deprives other scholars of the advantages which they would otherwise enjoy. Let the truant law be enforced.

For the Committee.—NATH'L HINCKLEY, *Chairman*; CHARLES F. GEORGE, *Secretary*.

DENNIS.

We are all of us aware that there are some branches taught in all the schools, that require the use of apparatus to be thoroughly understood; and even though the lesson be perfectly learned, the knowledge the pupil must be very vague without such illustration; yet the blackboard is, in many instances, the only thing in the room that can be used for any kind of illustration, although a few of the rooms are furnished with globes and maps, by means of private contribution. We trust some action will be taken by which each room may have at least a globe and other necessary apparatus.

But one other inexplicable feature in some of our schools ought to be noticed here. It is that so large a number of those who ought to be pupils are not found in the school-room at all, and some of these are the very ones who can least afford to lose the benefit of our schools. It seems to us that all argument in favor of the present system under which our schools are conducted would be superfluous. The superiority of the schools at present, over those in years past, cannot but be apparent to every candid and unprejudiced person who is acquainted with both. What then is the cause of the evil of which we have spoken? It seems that the fault lies somewhere outside of the school. We are led to believe that it is because education is not estimated at its full value by parents and guardians; because they have not taught their children that if they would win an eminence in society, they must improve the time in youth in gaining what is better to them than wealth—a good education.

Superintendent.—MOSES BAKER.

EASTHAM.

Another evil, to which we can but briefly allude, is the frequent change of teachers. For several years, districts One and Two have not had the services of the same teachers for more than a single term. We have of late employed several young men, classmates in Northmouth College, but who serve us but one term, and then go elsewhere where they can get better pay. As soon as they are fairly introduced they take leave of us, and then another set of strangers present themselves, and in turn go their ways, and we know them no more. If we be so fortunate as to secure the services of acceptable teachers of both sexes for four or five consecutive years, marked improvement is apt to think would be the result.

School Committee.—HEMAN DOANE, MICHAEL COLLINS, MYRIOR CLARK.

HARWICH.

We are at present in the transition state from the mixed district school to the graded system or method; and of an attendance of 1,587 scholars, 587 the past term have had the advantages of the graded plan, as far or as well as the schools could be graded under existing circumstances.

So far the work has been attended with good results. A high standard of school accommodations has revived an interest in school education, both on the part of parents and scholars; and adding to the efforts of live teachers, whom, for the most part, we have

ate in obtaining, especially the past term, our schools certainly
nt of education are manifestly in a better condition than they
een heretofore,—which is an evidence positively in favor of the
e which is being made.

School Committee.—ISALAH CHASE, WARREN J. NICKERSON, EVERETT HARRIS.

MASHPEE.*

undersigned, school committee of Mashpee, respectfully sub-
eir report of the two schools in said town for the school year of
1, as follows:—

1st District.—The summer term of this school has been taught
eks by Miss Lucy Tandey, and three weeks by Rev. Lorenzo
y, the father of the former. Miss Tandey had to leave her
before she had finished her term, on account of a severe fit of
ss.

whole number of scholars attending the summer school was
three. Average attendance, thirty-one. Under five years of age,
over fifteen years, two. Wages of teacher, per week, \$7.50,
ing board. Total cost of summer school, \$97.50.

winter term was taught by Rev. Lorenzo Tandey twelve weeks
o days, at \$10 per week, including board; making in all, for
\$124. There was also expended for fuel and sawing the
and care of school-house, by the school agent, \$12. Expended
ks, \$25. Total expense of winter school, \$161.

whole number of scholars attending winter school, forty-six.
ge attendance, thirty-two. Under five, none; over fifteen, six.
whole cost of school in this district: summer, \$97.50; winter,
Total, \$258.50.

ing stated cost and condition of this school, we would say that
as been a decided improvement in the government of the win-
ool, and your committee would say, that the change is very
able in the scholars paying more strict attention to their studies;
that is the case you may be sure of progress.

2d District.—The summer term of this school was taught nine
by Miss Carrie F. Small, at \$6 per week, board included;
g the cost of summer school, \$64.80.

ole number of scholars attending summer school, ten. Average
ance, seven. Under five, none; over fifteen, none.

ter term taught by Ellery O. Luce eleven weeks and four days,
er week, board included, making tuition \$106.20.

* I give entire the first report of this town.—SEC'Y.

believed that under the present management, the educational interests of the town are steadily progressing, and in conformity with belief the committee would earnestly recommend a continuance of the same.

To this end we ask authority of the town to appoint a superintendent of Public Schools for the ensuing year, and for an appropriation of an equal amount of money as last year.

Committee.—J. B. BAXTER, LUTHER NICKERSON, H. SHORTLE.

During the spring term fifty-five permits were granted scholars to be absent from school. In most of these cases the parent, and not the child, was the party at fault. The children were sent off on errands at just the time they ought to be in school; or, the child wished to go visiting, and the parent thought some recreation was necessary; the poor child did not wish to be shut up in the school-room all the time; and so time was spent, the child lost his or her place in the class, became discouraged, and, by and by, will add another to the dunces' class, and the list is too large from similar causes.

During the fall term like arrangements were made with the teachers of eastern and western schools with very good results. Thirty permits were granted to absentees, a very large proportion of whom were cranberry-pickers. There may be, and undoubtedly are, families where the parents feel the need of all the assistance their children are able to afford, to aid in the support of the family; but in several cases, concerning which special inquiries have been made, the amount earned has been so trifling a sum, that it would not meet the extra expense caused by necessary destruction of time from school, while engaged in picking. One was out of school a week, and earned seventy cents; another three days, and earned fifty cents; another three days, and earned only twenty-five cents. It would seem that no reasonable parent, who had the well-being of his child at heart, would be so unwise as to keep children from school for so small a pecuniary reward. The injury done the children, the mortification they suffer, caused by losing their position in their classes, is of far greater hindrance and loss than the benefits derived from the money earned, even if there was no extra outlay to gain it.

The question, How shall we secure a better attendance at school? is unanswered. It is said by some that parents should be compelled by law to send their children constantly to school until they are a certain number of years of age. It certainly has a very bad appearance on the part of parents, that the neglect of duty to their children should call for such expressions of opinion; and yet we find it to be one of the most prominent themes for discussion at almost every teachers'

BOARD OF EDUCATION.

ing that has been held for the past year. Could parents be so sensible of the great injury they do their children by taking them out of school at such an early age, to labor, or what is far worse, by leaving them sitting them to stay out of school for no purpose at all, or by leaving them on the street, it cannot be doubted that they would use every effort to have them attend punctually and constantly, until they had secured at least a thorough Grammar School education. It should be done at the age of twelve years, as above intimated. What are the facts? It is a fact, however mortifying it may be to our ears, that there are scholars in our Grammar School to-day, that do not read as well as they did five years since, when they were members of the Intermediate School. What is the reason of this? Since the law passed, as they have been taken out of school to work summers, or to be employed in most cases, they have been permitted "to close school." The older scholars have left to engage in some necessary employment, to roam the streets with nothing to do, nothing to occupy their minds, but to "kill time." They are found lounging around saloon doors, waiting for the scholars to come out at recess, or at dismissal, to join with them in their play and sport, but when the bell strikes, they stroll off down on the wharves, or by the shore, and spend their time in throwing chips or stones, or committing nuisances, to the great annoyance of good citizens. These children form a large class in our schools, which is a large class, from mere neglect, and nothing else. How long this condition of things shall continue, is for the parents to decide. No one can answer for them.

At the last session of the legislature, a statute law was enacted requiring drawing one of the required studies of the Public Schools. Bartholomew's series of drawing was adopted by you for use in the schools, I made some inquiries concerning what they were doing in relation to the introduction of drawing into the schools in different places. I learned that in some towns they were so fortunate as to have more or less teachers who understood the subject sufficiently to commence, while others had taken no action on the matter.

We are not of that fortunate few who have among their teachers those who can even make a beginning to teach drawing. When the question arises, What shall we do? Shall we employ a special person to visit our school and teach drawing; or shall we select a person for a term, more or less, some suitable person to teach our teachers, and they in turn teach the scholars of the school? The answer is for adopting the latter method, since the teachers, if properly trained, will give more attention and practice to themselves more in the art than they otherwise would.

noticed that the school board of the city of Boston had sent to and to engage the services of a competent Professor of Drawing, in the schools of the city; but as our funds do not warrant following so illustrious an example, we must be content with the most of our means. In this connection let me say, that effort has been made to have vocal music taught in the schools the next term; how it will succeed it is impossible to say at the present time. My wish is to have both vocal and instrumental music in the schools, but especially in the High School. I think there should be a teacher in the High School whose special duty should be to teach music, drawing and the modern languages. Such a teacher should have a place among us, and I know of none better suited to meet the public wants than our High School; the direct result would be to build up the school and enlarge its field of usefulness.

Superintendent of Schools.—B. F. HUTCHINSON.

SANDWICH.

Every day that witnesses the commencement of a hearty sympathy and coöperation with the teacher and his work, among the parents in the home circle, will witness the dawn of an era of increased usefulness in our Common School system. It will shake off the obstacles which now hamper its onward progress, and with the new, fresh impetus such coöperation will give to it, will advance far towards the realization of the ideal of our prominent educators. Until that day, Normal Schools may be established with corps of efficient and zealous instructors, Institutes may be held, county conventions organized, and works on the theory and practice of teaching by the State be issued; the effect will be neutralized by damaging influences of this indifference. It is like striving to purify a stream by diverting one of its sources while from another source it is constantly receiving increased supplies of filthy water. We will hope for the dawn of that happy day, and each and all doing well the part assigned to him, will help along the consummation.

Local Committee.—WM. C. SPRING, CHARLES DILLINGHAM, CHARLES N. HINCKLEY.

WELLFLEET.

The most difficult schools we have under our care is the male department of our Grammar Schools. One reason for this arises from the composition of the schools—the scholars being almost all from the fishing fleet. Eight months in the year they are on the sea—that

BERKSHIRE COUNTY.

ADAMS.

years ago we filled our Graded School buildings with the raw from the District Schools in the village. We entered upon a new system with all the mingled doubts, misgivings, hopes and fears usually attending a radical change. The town had just received one hundred and twenty thousand dollars for two school buildings, one in each village, in which all the scholars in the villages were to assemble for instruction. This was breaking away from the system established by the fathers, and disregarding and condemning old customs covered with the mildew and moth of age and tradition, cherished as a sacred trust received from the worthy and the past; and the question naturally asked was, "Will it pay?" A short trial has already fully answered that question, that it does pay,—it pays in unknown and unlooked for ways. One of the principal items is the spirit, ambition and zeal each child has for knowledge and proficiency in its several studies, in punctuality in attendance and in quick and ready perception of the matter in question.

In the Graded Schools in North Adams the percentage of attendance for the last term, was 93 3-10. The percentage of attendance in the "District Schools" in the north part of the town for the past term was 77 4-10. The percentage is large on these last mentioned schools obtained under the many difficulties and disadvantages, the distance from school, cold and stormy weather, bad roads, and, in most cases, poor school buildings, yet under all these difficulties, so anxious are the children to attend school, that they may pass from these into the Intermediate departments of the Graded School, that they overcome all difficulties and oppositions interposed. To the Principal scholars the Intermediate department is the maximum of their education, the Grammar to the Intermediate, the High School to the Intermediate, and the graduating class to the High School; thus "grade after grade," and ever calls forth the best qualities and highest attainments of the scholars.

Committee.—A. G. POTTER.

ALFORD.

Twenty-five per cent. of the children, numbered May 1st, have been members of any of our schools during the year; while the average attendance in all the schools is but little more than five per cent. of the children numbered.

These two facts should be sufficient of themselves to arouse in one of our citizens, who has or feels any interest in society, government, education and the rising generation, an earnest inquiry after the causes of so great a disregard, so criminal a neglect of the best interests of our Common Schools, so freely and generously placed within the reach of every child in the Commonwealth. By some, it is imputed and accounted for, by supposing many of our children to live so distant from school that they cannot attend and receive its benefits; but this is no satisfactory cause, for we find many of those children who live the most remote from the school-house, the most regular and prompt in their attendance, and consequently the best and most advanced in their education. Others may suppose it is because parents need the services of their children in some useful employment, to aid them in supporting the family and procuring the necessaries of life. But this is not generally the case; in fact it is seldom true, for the absentees are frequently seen rambling in the fields, fishing along the brooks, loafing where there is no game, and lounging in public places, using their time to themselves and an annoyance to others.

The true reason, we think, is the too apparent apathy and want of interest in and appreciation of the real importance of the school and its privileges by our citizens and parents. Many a parent and citizen treats our schools as of the slightest importance, and is ever ready to judge and condemn the teacher and his work on mere hearsay or the report of an ungoverned child. This is unrighteous judgment, and should not be passed until facts are established by personal observation. Let such individuals visit the school-room, become acquainted with the teacher, converse with the teacher. They have a common interest in the same subject, and their presence from time to time in the school-room not only sustains and encourages the teacher, but shows to their children that their sympathies are with him, and on the side of good order and correct deportment, that they are in coöperation for the child's best interests; and in this way their own aspirations are aroused, and the pleasure is caused to grow up in the child that it is a pleasure and a privilege to attend school, and not an irksome and disagreeable task. Thus may many unjust prejudices be removed, and where there has

neglect and disregard may there not be the most perfect attendance!

Committee.—HENRY W. SMITH, LESTER T. OSBORNE, W. C. HINMAN.

BECKET.

Education of our youth does not consist merely in school-book learning, but in the ability to act well the part allotted to them in that allotment is very much depending upon their own select and industrious habits, exercised in some useful vocation, are invaluable, and should be considered of prime importance by all parents, that their children may become useful and avoid those pernicious habits which idleness is almost sure to beget. What course to pursue with children and youth in order to best fit them for useful employment should be a subject of more thought and action with parents. A love of usefulness should be a part of their early training. For parents to toil hard to bring up their children in idleness, is wrong, a greater wrong is done to child than to parent.

How shall we employ them? Give them something to do where they have a responsibility. Let some special daily labor be theirs to look after, if possible, teach them to be useful in that occupation we wish them to follow when grown up. Constant book-schooling during that period in which character and habits are most readily formed, unless with a definite object in view in which the scholar is deeply interested, has a tendency to produce a book-worm, or knowledge to the sacrifice of industrious habits.

Committee.—C. O. PERKINS, WM. S. HUNTINGTON, S. W. CARTER, ORRIN MILLER, P. CARTER, L. C. ROBBINS, E. B. RICHARDS, F. J. TAYLOR.

DALTON.

Training of Teachers.—The committee feel convinced that great benefit is derived from the employment of teachers well trained in their profession, and, other things being equal, would prefer those who have gone through the regular course at a Normal School.

We cannot expect to obtain teachers who have spent two or three years at such a school, in addition to the usual preparatory schools, at rates as those who have had no special training for this profession. The money at our command has not permitted us to engage such teachers for most of the schools, and the demand for them is so great that we could not have obtained them always, even if ready to pay the highest rates asked.

We are well pleased with the results of Normal teaching, and con-

sider the fact of having been educated in a Normal School commendation for any teacher to bring to any committee.

We are glad to see that one or two of our Dalton girls are to qualify themselves to teach by a course of training at the Normal School.

Drawing and Music.—Drawing has been taught to a limited extent during the year, and as it is now required by law to be one of the branches of learning to be pursued in Public Schools, we see it introduced in all our schools, and hope soon to find all prepared to give instruction in the art. Many of our scholars easily acquire a taste for drawing, and some may evince a special aptitude in this direction, which, well cultivated, will be a source of pride and possibly of distinction, in future years.

We are far behind many European nations in ability to make drawings of machinery and general draughting. It is said that all work of this kind in our own country is done by foreigners because native skill cannot be obtained. This should be remedied by giving our youth equal facilities for instruction in these arts as are afforded in other lands.

The governor's message informs us that the study of music has been introduced, with marked success, into the Public Schools of our larger cities and towns, and that it may be wise to make it one of the branches of learning required to be taught in our Public Schools. The committee have seen the happy effect produced in our own schools where vocal music has been taught and practiced, and would be glad to have it more generally introduced. We expect to attain to as great skill in the fine arts as some of our neighbors have attained to, till drawing, painting and music become as commonly taught and practised than they now are.

Evening School.—It has afforded the committee much satisfaction to see an Evening School commenced and carried on during the winter, for the first time, probably, in the history of the town. The enterprise was undertaken by men employed in factories, who, from lack of early education and desired to remedy this, and to receive instruction for younger operatives who were unable to attend the day schools, except for the brief term of three months, provided for by the statute law of the State.

The town authorities were glad to do all in their power to accomplish this laudable object, and gave the use of a room in the town hall for the evenings of every week, putting in desks for the benefit of the scholars. They would have been willing to do more; but with a determination to help themselves, the scholars preferred to do other things at their own expense. The school has been well

est, and we think it has been productive of much good. The committee observed, in visiting the school, that the scholars made advancement in writing and arithmetic, and understood that had done well in other studies. We thought proper to show our appreciation of their efforts by distributing prizes to the best scholars, in the same manner as at our other schools. Should the school be continued next winter, we would be pleased to have the town give it encouragement and support.

School Committee.—OLIVER BLISS HAYES, ABEL KITTREDGE, HENRY M. PARKER.

EGREMONT.

From the showing of the registers there is evidently a want of interest on the part of parents in our Public Schools. In District No. 1, no individual, except the committee, has visited the school during the whole year; No. 2, do.; No. 3, several visits are recorded, only one of which is by a parent; No. 4, a few visitors, no parents; No. 5, only two parents, with quite a number of friends of the teachers. Now this certainly is wrong. In order to secure the greatest amount of good for the child, the parents must manifest their interest in their children, in the teacher, in short in the cause of education, by frequent visits and careful attention to the means and methods employed by the teachers to promote the mental and moral culture of the children committed to their care. The benefits arising from thus visiting the schools are greater and more numerous than at first appear. First, a sympathy will be established between parent and teacher. (Of this element there certainly is a lack.) Few persons who never have taught can appreciate the labor and patience required to control the wills, to gain the respect and affections, and to improve the minds and morals of from twenty-five to sixty scholars of different ages, temperaments and under different forms of home government. Second, the teacher and scholars are both stimulated to more earnest efforts to excel, and thereby receive the approbation of their friends. Third, a more perfect understanding between parent and teacher will result. This I consider an indispensable prerequisite to success, and can only be obtained by familiarity with and a knowledge of the teacher's school-room qualities and qualifications.

School Committee.—GEORGE GARDNER, S. L. SHELTON.

HANCOCK.

It would be well for this country, if the school laws were like those of Germany, and as rigidly enforced. There, every child is obliged

two or three minutes, with a few rapid lines, would present a of the article, or work to be done, so clear that any one could size it at a glance. Michael was not really more skilful as a car- than the many others who had preceded him. But his knowl- of drawing, gained in a Common School in his native country, his services worth from fifty cents to one dollar per day more any other workman in the shop. He was always in demand and received extra wages." Now what was true of Michael in try, would be equally true of any other kind of mechanical labor.

School Committee.—MILO STOWELL, LYMAN PAYNE, E. H. GOODRICH.

LANESBOROUGH.

has been apparent to us and many of our citizens, and the atten- of the town has often been called to the fact, that the standard of rs has been quite too low, but the committee feel that there has a great gain in this respect during the year past. Three Normal tes and one graduate from one of the best private seminaries in untry, with other experienced teachers, have been employed suc- ly, and have conclusively shown that teaching is a science as an art, not to be attempted by every youngster who has mas- or partially mastered the multiplication table; that it requires ed and disciplined mind to train and discipline and mould ten- nds of children, to make them strong and vigorous, morally and ly, and lay a foundation on which to build their future structure wledge and usefulness.

teaching has been very successfully practised in most of the s to some extent, and the result shows a decided improvement rest as well as advancement on the part of the pupils. Especially the case in English Grammar, where a text-book has seldom sed by the pupil, and a greater interest in and a love for the has seldom been manifested by young scholars.

ect-teaching has been much more practised in some of our schools, nd without text-books, with marked interest and success. Map- g has been successfully taught in connection with the study of phy, and the committee is of the opinion that there is no surer r a child to obtain a correct knowledge of geography and at the ime to obtain the mental discipline desired by study.

al music has been introduced into some of the schools, not as a e but as a pastime and a means of moral culture, with marked a, and we earnestly wish every school in town could have the s and pleasures derived from this accomplishment.

School Committee.—WM. A. FULLER, JUSTUS TOWER.

LEE.

We desire to call attention, in this connection, to the Act of the legislature of Massachusetts in 1870, requiring that drawing be taught in our Common Schools. We are glad to notice this movement, and shall direct the teachers to comply with the law. It is not expected that we shall make skilled draughtsmen of the children, but to turn their attention to the forms of objects, to train them to accuracy, and accustom their hands to draw straight and true lines, and give the general outline of any object with which they are familiar. This is not so difficult a task as many suppose. Children who have grown up without any practice, may find some difficulty in giving an accurate outline of so simple a thing as a shoe-box, but children quickly catch the art, and they will find it of great use in their local business.

The American system of Public Schools is based upon the principle that intelligence and virtue lie at the foundation of republican institutions. If this principle is correct, and that it is all history and experience, then it follows that the State is under obligation to furnish an education to every child. The life of the government depends upon the faithful carrying out of this principle. The American system of Public Schools originated and has been developed, not solely from a philanthropic purpose to educate and consequently to benefit the children of the poor, but also with a reference to the preservation of the government itself. On this principle property has been taxed and schools have been established in all the free States, and the system is gradually extending itself among the States that have recently been reconquered. The taxation of the childless for the education of the children of the poor seems at first thought an injustice, but when we consider that all are in one boat and that the safety of this boat depends upon the skill of the crew, we must conclude that we are all interested in the education of those who man the ship.

We can never cease to be grateful to the founders of this system of Public Schools, nor to admire the wisdom of the general plan adopted by the Plymouth and Massachusetts colonists. It has recommended itself to posterity that wherever we find the descendants of the Puritans there we find free schools, and indeed the true Puritan does not emigrate to any country where his children and those of his neighbors cannot be educated together in the Public Schools. This is eminently a democratic system. The rich and the poor here stand on a common platform, and we hardly know which are the most benefited by the contact, the children of the poor or the children of the

latter are more refined, the former have more strength, and by coming in contact an equilibrium is produced and the deficiencies of one are in a measure remedied by the virtues of the other.

It is not what children learn at Public Schools from teachers and that alone makes them valuable. We know no place where common sense and human nature are more effectually taught than on the grounds of the Common School. Children are cute readers of character, and know each other far better than teachers know their pupils. On the play-ground the true character comes out; and the conceited are sure to be pricked till their conceit escapes, the proud are humbled, the modest are encouraged, and all fictitious distinctions of rank are abolished. If the teacher knows how to keep up the moral tone of the school, the vices and follies of the more degraded portions are frowned down by the public sentiment of the scholars more effectually than by any laws and penalties.

Prejudices of the various religious sects are modified by the children educated together. Man is a religious being, and we glory in it. Religion is that which binds us to God, and is designed to make us God-like on earth, and finally to fit us for heaven; but the error is we make our religious platforms too narrow. We want all to think and act in the same line in which we think and act, and this is nothing more contracted nor more contracting than the shibboleth of sects. No man can honestly say that the only road to heaven leads by Rome or Geneva, neither is all truth confined to May or Oxford. Our country is the habitat of all the various Christian denominations, and has specimens of almost all the pagans of the world, and will rue the day when it decides to aid in the establishment of sectarian schools. The waste of money on such schools is the least of the evils to be feared. How shall we ever be able to amalgamate a heterogeneous nation all these sects, if we educate them apart? The cohesion which now exists is due in no small degree to the fact that in our Public Schools children of different religious persuasions are brought together and their narrow prejudices melt away by social contact. The Protestant learns that the Romanist is not altogether "a child of sin," but has noble aspirations, warm affections, and good principles; and the Romanist learns that his heretic companion belongs to the same human family, and is not to be treated as an outcast. Even the "Heavenly Chinese" is found to possess many virtues which his Christian neighbors would do well to imitate.

Even as we admire our Public School system, we do not suppose it perfect. It has made great progress since it was first established, and there is a margin for still farther improvement. Whosoever will study the legislation of Massachusetts on the subject of schools cannot

fail to notice the upward tendency of the system. In the common Schools little was taught besides reading, spelling and principles of arithmetic. The curriculum of studies has been increased in these lower schools, and Grammar, High and Schools have been engrafted on the system, so that our Public Schools now furnish in our cities and larger towns better facilities for education than the Academies and Private Schools have ever done. The old-fashioned incorporated Academy is a pretty much obsolete institution in New England. A few that were largely endowed at Andover, Wilbraham and Easthampton, still flourish, but the great majority have coalesced with the free High Schools. We see the system still further improved, so that our small towns reap similar if not equal advantages with larger places. Education is just as essential in the country as in the city; among a sparse population, as in the more crowded village. It is very obvious while the Public Schools of the cities and large towns have improved and are now on such a high grade that the first citizens prefer to send their children to them rather than to Private Schools, the Districts have not made equal progress, and in many places are still lagging. It may not be practicable to establish High Schools in small towns, but they can be extended much more largely than at present, and Graded Schools can be established everywhere. The object in abolishing the district system and placing all the school care of the towns, was to secure these Graded Schools; but the transition, like all revolutions, has encountered much opposition from ignorance and prejudice, and most of all in those places where the change was most needed. We know that many noble men have been educated in the District Schools of our smaller towns; but the world moves on, and if these towns know what is for their good, they will not refuse the privilege which the legislature has granted them of establishing schools of a higher grade than the old district system ever contemplated.

School Committee.—ALEXANDER HYDE, ARTHUR GILMAN, N. W. SHAW, HURLBUT, GEO. E. CALLENDER.

LENOX.

Four or five good schools, including two departments in each, and continuing under the same teacher through the year, or a succession of years, would meet the wants of nearly all our towns, or if it should appear that more are needed, more could be provided. Our aim should be not merely to satisfy the requirements of the law, but to make the best possible provision for the education of our children. The care and improvement of our farms, and

plements of husbandry, our bridges and highways, are important but it is still more important to furnish our children the best for becoming intelligent, reflecting, independent men,—men knowing their rights and duties and capable of fulfilling the special in which they may engage, with honor to themselves and for good of others. Our temporal success, our highest happiness and advancement through life, depend upon habits of observation and reason, of punctuality, industry, accuracy and thoroughness, which, if they are not formed in early years at school, will never be formed, and we should consider nothing too costly that may encourage and assist our children in acquiring them.

At the High School, we are happy to speak in terms of unqualified commendation. We have abundant evidence of the indefatigable energy and application to his work, as well as of the thorough and accurate scholarship, of the instructor. We have thought it expedient to admit a number whose qualifications were much lower than we should have wished. We trust that ere long applications from others will have learned well all that is taught in the Grammar Schools and be so numerous that there will be no room for any others. In addition to the diligence and punctuality of the pupils in general, there has been nothing more to be desired. Absence, except for sickness or other unavoidable cause, has been almost unknown, the whole number of pupils during the last term having been 43, and the average attendance 42. In this respect, certainly, we cannot hope for any improvement, and in every point of view we are persuaded the school is fulfilling the best wishes of its friends, and exerting a most favorable influence in the educational interests of the town.

School Committee.—J. FIELD, W. M. CLARK, J. F. MORELL.

MONTEREY.

Let every parent consider it his or her duty to visit the school as often as once, at least, during the term. The effect will be apparent in the increased interest manifested by the pupils, and it is a duty we owe to your children, yourselves and your country. Visit the schools, and give your children what will be worth more to them than all the wealth you can bequeath to them; that is, a good education. Education in a free, enlightened and Christian State is continually a subject of the highest moment. How can the diamond lose its lustre from beneath encumbent rocks; and how can man be intelligent, industrious and enterprising, without the culture and discipline of education? We will waste no time in painting to you the wretched condition of many of our school-houses; we have done this

from year to year, but our labor has been fruitless. If the parents could be compelled to spend a winter in these school-houses where their children are required to spend their childhood days, it is all that would be required to arouse a determination in them to have better school-houses and school accommodations.

Chairman School Committee.—A. B. GARFIELD.

MOUNT WASHINGTON.

The attendance the past year has not been what we could wish, although much better than during former years. An irregular scholar is a hindrance to the school, as well as an annoyance to the teacher. No scholar should be kept from school for a trifling cause. The Public Schools of Massachusetts are not merely a privilege which the citizens enjoy. It is the imperative duty of parents to improve every opportunity to educate their children; and in order to do this properly, it is necessary that they be punctual at school. It is also the absolute right of every child, born in this land of free schools, to receive as good an education as is possible in the circumstances in which it is placed.

School Committee.—ORRIN C. WHITBECK, LUTHER H. PATTERSON.

NEW MARLBOROUGH.

To a limited extent the committee have further availed themselves of the discretionary power accorded them by law, of expending money for maps, globes, etc.; but our school-rooms are still sadly deficient in these necessary articles. It would undoubtedly be well to expend a fixed sum annually until this want is supplied. Teachers need tools to work with, and without them cannot do justice to themselves or their pupils. As well think of carving a beautiful statue with an axe, or painting a delicate portrait with a white-wash brush, as of securing a first-class school in a room whose only furniture is a seven-by-nine blackboard. In accordance with the law thereto relating, we have furnished "drawing cards and copies" to the schools throughout the town. The study seems to be a favorite one with a large majority of the scholars, and we are convinced is of great practical value.

Believing that the common practice of having but two terms in a school-year has in many instances proved detrimental to the best interests of all concerned, we have ventured to make a partial change. In the Centre and Mill River schools, the plan of having three terms in a year has been inaugurated, and promises good result. Should

the change prove, as we think it will, to be an improvement, it may with advantage be extended throughout the town.

Chairman.—H. D. Sisson.

PERU.

The number of schools in town can, in our opinion, be diminished without detriment to the scholars. We can thus lessen our expenses, have longer school terms, and improve the character of our schools. In very small schools the pupils seldom exhibit much enthusiasm or ambition for study. They seem to require the stimulus of example and numbers. A teacher can as easily manage and instruct a school of twenty-five as twelve. And the expense of educating a pupil in the smaller schools is double the sum expended for a pupil in the larger. As long as we maintain so many small schools, we cannot do justice to the young, without greatly increasing our school appropriations. Three teachers would easily perform the duties of the six, thus enabling us to continue our schools nearly twice as long as during the year past. The principal objection that could be urged in opposition to diminishing the number of schools is, that the distance would be too great for the children to walk. After the confinement of scholars for hours in a close or heated room, active exercise in the fresh air is imperative, to counteract the otherwise pernicious effects. It is the judgment of your committee that the walk necessary would, in most cases, be no more than a healthy exercise for the pupil. The ease as well as distance that a person can walk are mainly dependent upon practice. If we excel our ancestors in some respects, we have greatly degenerated in this. Our usefulness and happiness depend upon a healthy physical system, and if by the plan suggested the young shall be invigorated, while their intellectual training is in progress, a twofold advantage will be attained. The amount saved from the present expenditure for teachers, fuel, &c., thus permitting longer school terms, would amply compensate for the trouble of conveying the pupils to the centres, where the schools may be established. Perhaps this is impracticable; nevertheless it will be well for us to consider this subject in all its relations.

We congratulate our citizens upon their refusal to return to the old district system. In the judgment of your committee, to have done so would have been an advance "backwards." And the present is not the age for retrograde movements in any matter pertaining to our educational interests. Complaints are made that the new system abridges the rights and privileges of the citizens. But we do not so regard it. The schools are as completely under the control of the

people as when the old system prevailed. You elect your own committee, decide where you will have your schools, and make applications for them. The authority and power of the committee is as before, with the additional duty of taking charge of the property and securing the teachers. The constant trouble and apprehension arising under the old system, between the particular and general committees, is obviated by the new law. Some maintain that the new system is adapted to cities and large towns, but is unsuited to small towns. We only say we do not perceive any difficulty in its application to large or small towns, nor are we in possession of any facts that justify such a conclusion.

Reading is the basis of every study, and therefore ranks first in importance. No one should aspire to become a teacher who cannot read well. Can a person teach what he does not understand himself? No applicant should be approved who does not read understandingly and so be able to lay the foundation for correct and impressive reciting. At the commencement of each term we have urged upon the instructors the importance of giving more attention to this branch, and very satisfactory results have followed. The habit of reading in monotonous tones, or rapidly with indistinct utterance, has, in some degree, given place to a more full and distinct enunciation, with more careful regard to inflections, emphasis and pauses. So numerous new studies now introduced into our schools, that some of the most important ones, as reading and spelling, are too much neglected. A child may be reading enough, but the pupils are not thoroughly drilled. "James, you read too fast." James hears, but the habit is fixed. When his turn comes he reads as before. The teacher does not repeat the criticism is forgotten, and James reads on to the end of the term without improvement. The teacher should say, "James, you read too rapidly; it is a very bad habit, and must be broken up. We will begin now. I will read the sentence first, then you read it after me." The teacher reads; James reads. "I will read it again; then you read and see that you read it slower." There is decision in her manner and voice. James perceives it. This time he tries, and succeeds. This, followed rapidly for a short time, and the work is done. When the school season is past, the young must rely chiefly upon themselves for general information, and if they have failed to become good readers at school they rarely acquire a love for reading thereafter. We suggest that the committee, at the commencement of each term, give that prominence to this most useful and desirable accomplishment which its importance deserves.

Chairman of Committee.—C. S. ROCKWELL.

PITTSFIELD.

Supervision of Schools.—It has been remarked, by the superintendent of Public Schools of Boston, that the most imperfect part of the educational system of Massachusetts was found in the supervision of schools. In all departments of life, where there is much labor to be performed, supervision is almost always indispensable. All classes of people need some controlling influence to guide them. The scholar and the teacher both need it.

The members of your committee, being more or less absorbed in business, or burdened with the cares of professional life, find it almost impossible to attend to the details of labor demanded by the increasing importance of our Public Schools. There is an evident necessity for employing some person whose duty it shall be to have the special oversight of all the schools, and attend to the multiplied wants growing out of our school system. We have twenty-two school-houses, needing constant looking after as to cleanliness, conveniences and repairs; we employ forty-two teachers, and there are nearly two thousand scholars in the various departments; there is a large amount of de-central official work to be performed; the expenditures are large, and in another department of town affairs should we expect to employ a clerk to look after so many persons without a competent officer at the head. Your committee would respectfully suggest that authority be given for the appointment of superintendent of Public Schools.*

Committee.—A. N. ALLEN, *Chairman*; C. B. REDFIELD, JOHN TATLOCK, OWEN COOGAN, J. FLUNKETT, JOHN E. MERRILL, GARDNER T. BARKER, 2d; JOHN M. BREWSTER,

STOCKBRIDGE.

It is however much we may differ about the management of our schools, and notwithstanding some may think there is not and cannot be any improvement made, yet we think there is an increasing interest manifested in our schools by the parents and friends of the children who attend them. Our school registers, and our annual examinations, show a larger number of visitors the past year than ever before. This is an encouraging sign. Heretofore, the apathy of parents has been something quite surprising; and it has been, and now is, one of the great obstacles to the improvement of our schools. When parents come to the conviction that the correct education of their children is a duty that cannot be neglected, transferred or avoided, we

are happy to be able to say that this recommendation was promptly responded to by the appointment of a Superintendent.—BAC'T.

shall have fewer complaints of truancy, tardiness and irregular attendance; and an impetus will be given to the cause of education among us, such as we have never before witnessed, which we can scarcely have any adequate conception. Let us then, with gratitude and delight, any indication, even the slightest, of the "good time coming."

Your committee are sorry to mention that, notwithstanding the liberal policy which the town has pursued during the last five years towards our schools, there are quite a number of children who, for some cause, do not seem to reap the advantages which such a policy should certainly bestow. In all our villages, and perhaps in other parts of the town, it is believed there are some who do not attend school at all; or, if they do attend, attend so irregularly as to derive little benefit from the schools. This ought not to be. One idle, vicious boy, roaming the streets, while his companions are obliged to attend school, exerts an influence whose consequences for evil can scarcely be overestimated. We have truant laws which are believed to be efficiently executed; but, notwithstanding these, it is a fact that numbers of young people are growing up in our midst in comparative ignorance. Should they ultimately fall victims to vicious habits or practices, the responsibility in the premises could not be considered a matter of small consequence. The school system of Massachusetts has recently been pronounced by a distinguished Englishman, who visited this country during the last summer for the express purpose of examining the educational systems of the country, the best in the world; and, we may so consider it, if we see to it that its efficiency be not weakened by our neglect to enforce those rules and regulations which are obviously intended to maintain and strengthen that efficiency. We would, therefore, recommend to those who may be selected as truant officers for the ensuing year, that they see to it that all the children of the town attend school, for the time at least which the law requires.

Williams Academy and High School.—When the town first voted an appropriation to maintain this institution, it was deemed a doubtful experiment. Fortunately, however, our favorite town clerk, Mr. Canning, was prevailed on to take charge of the school, and at that moment its success was assured. He continued in that position until the close of the last summer term, when, very unexpectedly, much to the regret of all his pupils and patrons, he resigned. He had taught in the same place upwards of twenty-five years, and brought to his work a ripe scholarship, fertile imagination, and such personal qualities as greatly endeared him to the many hundred pupils who

l by his instructions. He will long be remembered by them for
ering inspirations to them in their student life.

ng the year, we have succeeded in establishing a course of
both English and classical; and, in spite of the many difficulties
threatened such an attempt, it has been completely successful.
upil, now, may be regularly fitted for college, and at the com-
of either of the prescribed courses will be entitled to a gradu-
diploma.

r committee desire that the matter of a regular course of study
High School should commend itself to the consideration of all
ple of the town. Our impression is that no school can really
ed a High School without this feature. At any rate, it can
o distinctive character as such. It must be borne in mind that
school is designed to meet the wants of the community at large,
t to accommodate the peculiar wants and views of a few. More-
is quite evident to any one conversant with our schools, that
ne pupil shall study is second only in importance to the manner
h that study shall be pursued, and that he needs guidance and
on as to one as much as to the other. Desultory study can ac-
h but little in disciplining and developing the intellectual
, and therefore some course, and, if possible, that course of
training which will best fit our youth for the active duties of
ould be adopted. It may be that in some individual cases a de-
from the prescribed course of study is desirable; but it should
erally understood that when a scholar enters the High School
ll select one or the other of the prescribed courses, and pursue
termination, or confine himself to it so long as he remains a
r of the school. It has been well said, "that the teacher who
control the course of study of his pupils, finds it much more
t to discipline and govern them. The conduct of a scholar who
definite plan or course of study before him, and does not feel
essity of devoting a particular time to a particular thing, will
a general thing, submit himself so readily and implicitly to the
ne of the school as those to whom such independence of action
ility of chance are not allowed." And with no definite object
him, and the associations of no class community of study to
m, the attachment of the pupil to the school will be but slight,
best, he will regard himself as temporarily attached to it, and
o dissolve his connection with it at any moment.

d Committee.—JOS. R. FRENCH, M. WARNER, E. S. CURTIS.

BRISTOL COUNTY.

ATTLEBOROUGH.

The committee feel a good degree of happiness in submitting their annual report to the town, so favorable to the schools. We found the High Schools maintaining the reputation heretofore and continuing to accomplish the purposes of their establishment to a far higher degree than could be even reasonably anticipated. We consider some of the obstacles in the way of success in our schools are unfavorably located, the one at the north occupying a poorly ventilated room, with capacity altogether insufficient for its accommodation, while that at the east is forced to hold its sessions in the unsuitable apartments of a manufactory. Under the circumstances the results of the experiment have been gratifyingly successful, and we feel encouraged to look forward to the future of our High Schools as indeed most hopeful, when we remember the more auspicious prospects of the present as contrasted with those of the immediate past.

At this point the committee cannot refrain from urging the authorities in some localities to remove as speedily as possible certain old structures too long used as school-houses, but calculated to be places of torment. Let all these depart, so that those who have known them, "shall know them no more forever." "What will the father give for a son, whom if his son asks bread, will he give him a serpent? Or if he asks a fish, will he give him a serpent?" Let our schools afford their children the very best means and appliances of a finished education. And none can mistake the great advantage possessed by those occupying large, modern, well-constructed buildings, over such as are confined in small, forbidding, shabby buildings. Let parents personally visit the schools and they will find more progress, far greater attainments, a high and nobler ambition in the localities where the surroundings are all right, where the best progress are scattered with a liberal hand. There the best will seek employment, and there also will the perennial fruit of the educational system be found in their greatest perfection. We commend this subject of suitable school-buildings to the attention of those directly interested in it.

An enthusiastic school will be successful. Where listlessness and indifference never come; where life, energy and zeal

and, there must be advancement, there must be continued progress toward that higher plane above." We would have our teachers visit other schools, that they may learn to practise new and better methods, or avoid discoverable defects. We would have them become familiar with the exercises of Teachers' Institutes, for in them behold a field richly decked with golden sheaves of ripened experience and accumulated knowledge. We would have them study fully the Massachusetts Normal system of teaching. And we have, after all, the great and pressing want of our schools is enough, faithful, Normal teachers. Let us secure these, and we, with their advent, enter upon a course of systematic and thorough training of the pupils in every branch of study taught in institutions of learning.

We desire to see improvement in another direction. It appears to the committee that our schools should be conducted upon some well-defined general plan, so that in those of the same grades there shall be found existing a substantial uniformity. In unity of purpose and unity of action, the most stupendous events recorded in human history have been planned and accomplished. In the management of the complicated educational system existing among us, can we ignore this principle with impunity? "Can we expect grapes of vines, or figs of thistles?" As reasonably may we expect these impossible results, as look for the best fruits of our toils in the fair fields of science, when they are spent in such ill-advised, incoherent, heterogeneous efforts as too generally exist among us. Let us have concentration of purpose, some comprehensive plan of operation, uniformity of action, and then we believe the best results will be uniformly obtained.

We feel called upon to censure in the severest terms a practice, alarmingly prevalent in some localities, of detaining children away from school altogether, or such portions of the term as to render the thing entirely valueless to such scholars. In one school of sixteen pupils, the past winter the average attendance has been

In several others, twenty-five or thirty per cent. of those legally entitled to school privileges have been cruelly and wickedly deprived these inestimable blessings. We look upon the parents guilty of enormities as worthy of being beaten with many stripes. And we call upon the inhabitants of the town to cause the laws of our old Commonwealth to be rigidly enforced against this class of criminals. Parents must send their children to school. Nothing but sickness can excuse them. The schools are established for the education of all the children; books provided at the public expense when necessary; hence all without exception should be made to par-

ticipate in their benefits. Individual happiness, the public private rights, the laws of the State, all these equally require. Finally, let us cherish the schools as our own institutions and teachers as our best friends and our most profitable servants. Let town more liberally support and more heartily sustain them, they are continually scattering among us the richest elements of prosperity, "by impressing upon the minds of children and youth principles of piety, justice and a sacred regard to truth; love to country, humanity and universal benevolence; sobriety, cheerfulness, moderation, temperance; and those other virtues which are the cement of human society, and a basis upon which a republican constitution is founded."

School Committee.—L. W. DAGGETT, ERENEZER CARPENTER, Rev. W. B. E. ADAMS, Jr., Dr. F. L. BURDICK, L. L. WHITING.

BERKLEY.

If these data, as furnished to us by the assessors and by the school teachers, are correct, there are 28 children between the ages of 5 and 15 years who have not attended school at all.

In the language of last year's report we inquire: "Whose children were these, thus deprived of the inestimable privilege of attending school which we provide and desire for all, and of thus qualifying themselves for a sphere of usefulness in the discharge of the various duties of life? Who were those parents so indifferent to the well-being and dearest interests of their children,—so neglectful of duty and so careless of the sacred discharge of it as to allow their children to absent themselves from school or possibly do the still more culpable act of preventing their attendance? This flagrant violation of parental obligation and of school law should not be permitted, and we hope for the sake of human progress will not recur again." But sorrowfully do we record that the same appears to have recurred again and in a greater degree than last year. There is a serious wrong in this matter. Where does it exist?

School Committee.—WALTER D. NICHOLS, DANIEL S. BRIGGS, HERBERT A. D.

DARTMOUTH.

We think the contrast between our schools at the present time and those of former years, must be most cheering to every unbiased observer. We are happy to be able to state, that parents and others have paid more attention to visiting our schools during the past year than in any one preceding, and it has been productive of much good. Very much has been gained, still there remains much to be done to a

ant attendance of all. The frequent visits of parents and guardians at the schools, we are persuaded, will tend very much to bring this desired result. A word of encouragement, fitly spoken by or even a kind look, will stimulate the scholar to higher attainments, and make him feel that there are those deeply interested for his welfare.

Teachers' Meetings.—Teachers' meetings were held once a week during the past winter, with a decided improvement over those of the year. We find that united action, on the part of any considerable number of persons laboring for the accomplishment of the same purpose, is almost surely productive of better results than can otherwise be attained. This is particularly true in regard to the work of the teacher. The associating together of teachers for the purpose of increasing a deeper interest in our schools, must necessarily tend to elevate the standard of education. Much interest was manifested on the part of most teachers to attend them. Different topics were brought up for discussion, and all took an active part in them. Much interest was evinced on the subject of good reading. The committee, in visiting the schools, found the most improvement made in those where the teachers were constant attendants of said meetings. During the short time they have been established, we think much good has resulted therefrom, and it is to be hoped that that which has been so auspiciously begun may be successfully continued.

Graded School.—There was only one school at South Dighton for the spring term. Sarah H. Sanford was appointed principal, and Fizzie E. Matthews assistant. The school was then graded, and John R. Marble, from Rhode Island, was appointed principal of the new grade for the fall and winter terms. The school was a very successful and profitable one,—a credit to this or any other town. We are now obtaining some of the benefits of the new system.

School Committee.—JOB S. GIDLEY, JOHN T. FAUNCE, GEORGE W. FRANCIS.

DIGHTON.

Graded System.—The past year has been especially noteworthy in the history of our schools for the introduction among them of the graded system. The schools in the other parts of the town are so small and widely separated, that the system has been established only in the villages at North Dighton and South Dighton. A Graded School was opened in North Dighton in May last, and one in South Dighton last September, the new school-house in that village not being completed until the middle of the summer term. Though the Graded Schools have been in existence for so short a period only, they have

abundantly proved their superiority to those which they have displaced. This superiority is manifested in the greater efficiency of the schools, and in the increased interest of the scholars. The labors of the teachers have been far more effective, owing to the fact that while the number of scholars is no less than formerly, the number of classes has been diminished, the classes themselves being much larger. Under the new system, scholars of all ages and degrees of proficiency being taught in the same school, even when the pupils were few, the classes were very numerous; so that it was almost impossible to hear the scholars during school hours. The increased efficiency of the schools is due also partly to the increased interest taken in them by the scholars. The larger scholars, being separated from the smaller ones, and attending a school of higher grade, feel a pride in it never before manifested. They study better, and behave better, being ambitious to do credit to themselves and their school. Their parents and friends have exhibited an interest in the schools which was never before manifested. We may add that the expense of the largest of these schools, the South Dighton—has been less per week than under the old system. Upon the whole, we claim that the graded system has been successful, that every one who desires the improvement of our schools should consider its abandonment a very long step backward.

These Graded Schools, we may also add, have not been restricted to their advantages to the children in their vicinity, since scholars from other parts of the town, qualified to enter their upper departments, have been permitted to do so. To some extent they have availed themselves of this privilege, and there is no doubt that it will be more and more highly prized, as the superior advantages of a Graded School are more widely and justly appreciated.

There is no other period of the year so favorable, both for the opening school and for study, as the fall months. They are more free from any other portion of the year from those prevailing sicknesses and complaints which very frequently in the winter keep many scholars from school. Thus the practice which has been adopted in the fall of keeping the schools during the hottest and coldest periods of the year, and omitting them during the fall, is not in the judgment of the committee a wise one. They propose, therefore, to have a summer term, and to begin the schools early in the fall.

School Committee.—E. DAWES, C. W. TURNER, J. SHOVE.

EASTON.

It will be seen by the table appended to this report that the number of terms has been increased from two to three. This became

cause by the increased appropriation of last year it was possible to have thirty-three school-weeks, being an increase of seven over the year before. The advantages of three short over two long terms have been carefully summed up in the school report of last year, and have been proved by actual experience. Much satisfaction has been expressed concerning this additional number of weeks of school, and the school committee recommend that the appropriation for the coming year be so far increased as to allow thirty-six school-weeks each year for three terms of twelve weeks each.

The subject of truancy is an old and tiresome one, and would not have been introduced into this report were it not that your committee have some practical measure to counteract this evil. In North Attleboro there have been several cases, during the past year, of truancy, which has been joined with constantly increasing misconduct. And that reporting these cases to parents does little or no good, the measure of staying from school seeming to the truant sufficient satisfaction or offset for the flogging he gets at home, or the correction he receives at the hands of the teacher. To expel such children from school is just what they would desire, and is often a real harm to the child, though apparently demanded by the interest of the school. What seems to be needed is to produce a wholesome restraint upon the child by sending one or more of the most incorrigible to the Reformatory, or some similar place. In order to do this it is necessary for the town of Easton to adopt such provisions in the General Statutes of the Commonwealth as refer to this subject of truant children and truants from school, and to appoint truant officers who shall attend to their execution. By-laws concerning this subject will be presented at the approaching town meeting.

School Committee.—GEO. G. WITHERINGTON, WM. L. CHAFFIN, OLIVER AMES, 2d.

FAIRHAVEN.

There has been some improvement during the past year in regard to actuality in attendance, but the average is yet far below what it should be, not reaching quite 77 per cent. The record of this low attendance, however, does injustice to the scholars generally. It is due to a great extent by a few subjects of parental neglect, who, in order to escape legal discipline, are sent into the school long enough to obtain a membership, and then are allowed to drift about growing up in ignorance, schooled in vice, untaught in knowledge and virtue. These are difficult cases to deal with. The letter of the law is complied with, while its spirit is evaded. Is there no way to rid the streets of these pernicious idlers, and compel their

regular and punctual attendance at school? We respectfully earnestly ask your attention to the care of these neglected children for they, more than all others, need the benefits of our Public Schools, and if the public does not interest itself in their welfare, nothing can rescue them from a life of ignorance, with its consequent degradation and misery. There is a limit to the operation of the truant law, beyond its bounds lies a broad field for the operation of a spirited benevolence.

School Committee.—I. FAIRCHILD, Chairman; C. D. HUNT, Secretary.

FALL RIVER.

The per cent. which our average attendance bore, in 1868-9, to the number of children in the city between 5 and 15 years of age, was 64 62-100; while for the year 1869-70, as we anticipated in our last report, the per cent. is but 57 56-100, as will be seen by the report of the Secretary of the Board of Education. Our rank is the lowest of any town in the county, and the lowest but eleven in the State. Does this speak well for the public opinion of our city on this matter of school attendance? Nor is this an accidental occurrence, for it has been substantially our history for many years; and it may justly be styled chronic. Public sentiment must be aroused on this subject, for the evil is grave, and if continued the results will be prejudicial to the prosperity and moral tone of the city. Truancy is, not, we believe, the principal cause of this result. Selfishness, indifference on the part of many parents, and a general indifference to the subject by too many of our citizens are perhaps the leading causes which conspire to produce this sad state of affairs. While we have 2,945 pupils in our Primary Schools, we have only 926 registered in the Intermediate grade. Therefore, more than two-thirds of our Primary scholars never enter the Intermediate grade. Hence, all that years of schooling, the time which we fix as sufficient to complete the Primary grade, is all that two-thirds of our children receive in our schools, if we except the Factory and Evening Schools. This is an overdrawn picture; it is an actual verity, as an examination of our previous reports will substantiate. *The school law does not seem to meet our wants in its practical operation, although its letter and spirit require to have a compulsory appearance. For cities, at least, and especially for the large manufacturing centres, we need some legislative enactment more suited to our torpid condition.*

The following extract from a letter written by the Hon. A. J. Della, a member of the British Parliament, to the National C

of Education, Gen. Eaton, is to the point. "The munificence of the American people in the sections I have visited, in providing education, is, in my opinion, entirely without a parallel; a good education being offered free to every American child. If I have any regret, it is to notice that where such ample, almost lavish, provision has been made, there are still many who partake very sparingly only, and others absent themselves altogether from the feast. *If you introduce a plan for enforcing regular attendance for a course of years, as is done in Germany, your educational system would leave nothing to be desired.* I may state, from long experience, that the education of children is wholly dependent upon the parents, the idleness, or the indifference or intemperate habits of many, will leave a considerable number to be entirely neglected, or only partially educated; and in a country like yours, where the only guarantee for the free institutions is the intelligent assent and support of the citizen, the State and the Nation have a right to demand that those who are in the government of the country and enjoy its privileges shall have had the advantage of education and a virtuous training."

Senator Wilson says, "The two great necessities of the country, at the present time, are unification and education. A voice from across the Atlantic, echoed and re-echoed from the bloody battle-fields in the recent Franco-Prussian war, is significant and to the point. A system of compulsory education, established for more than two centuries in the northern portions of Germany, and for more than a century and a half in Russia, has brought forth fruits which the world see. France, with her more fertile country, with the prestige of a brilliant military record, lies beaten on every field and helpless at the conqueror's feet."

Mr. Pattison, the English school commissioner to Germany, says, "The habit of universal attendance at the day school is one of the precious traditions of the German family."

In this city, non-attendance at our schools is our great weakness. It is the defect above all others which claims and should receive our attention; for our strength and prosperity in other directions will be a comparative weakness, unless this is remedied. Our schools should receive the fostering care of every citizen, and every child should be induced by the elevated tone and controlling power of public sentiment, or compelled by stringent enactments, to attend upon our schools a series of years and acquire a good education. Not the mere acquirement of being able to read and write only; but a higher, broader and deeper culture, an education which will develop the intellectual, moral and physical inherent powers of every child to such an

extent as will fit him for society and business, and those other which belong to the humane and Christian citizen.

Drawing School.—The committee, in accordance with the act passed in 1870, opened an Evening School for instruction in industrial and mechanical drawing.

Two classes, exclusively males, were formed in mechanical drawing, and one of both sexes in free-hand drawing. The classes in mechanical drawing are composed largely of mechanics, both apprentices and journeymen. They take hold of the enterprise with a degree of interest worthy of commendation; and their enthusiasm gives promise of application sufficient to make the art of practical benefit in their daily work. The class in free-hand drawing is composed largely of the teachers of our day schools, though not confined to them as a class.

The school has not been established long enough for the committee to form a correct judgment of the benefits which may result to the individual pupil or the city at large. It opened well, numbering 100 in mechanical drawing and 80 in free-hand.

The success of the individual pupil will, in a large measure, depend upon his taste for the work, and the degree of application with which it is prosecuted. This is a study, like all other branches of learning, and the scholars will find that to learn even to draw is work.

The committee look upon the passage of the Act for the establishment of these schools as a step tending to reduce our school system to a more practical character. Every mechanic should be enabled by means of becoming conversant with the general principles of mathematics, philosophy and chemistry. And the day is undoubtedly not far distant, when schools shall be established for instruction in the various other kindred branches suited to the wants of both sexes in practical life.

Moral Culture.—In presenting this subject we do not feel that school morals have been neglected in the past. Yet having received information from the city marshal that the list of juvenile offenders is increasing, we feel that the subject is one of more than ordinary importance at this crisis in our history, and should receive a large share of attention in our schools as well as at our firesides. This is a subject which all good people are interested, yet is too often neglected in the halls of learning. Moral and intellectual culture should go hand in hand; the former enriching the heart with all that is virtuous, noble and pure; the latter the mind with choicest treasures of knowledge, science and truth. Then shall our school system accomplish its whole purpose when the whole people shall be educated in the graces of the heart and the embellishments of the mind, with equal fidelity; and

ence and goodness, the basis upon which our republican institutions are founded, and from which they derive their vitality and strength, continue ever "sure and steadfast."

Committee.—WM. CONNELL, JR., FREDERICK A. BOOMER, ROBERT ADAMS, HENRY, JEROME DWELLY, CRAWFORD E. LINDSEY, MILTON REED, CHARLES J. S. WRIGHT BUTLER.

Is the complaint, that the present is a forcing system, a just one?
 No. There is no schedule of study, of any city, and certainly not of ours, which requires more of a pupil than any child of ordinary health and ability can easily perform, with judicious instruction during the six school hours. Occasionally, an extremely delicate child, who never ought to be confined in a close room, suffers, not from mental effort. Among a large number of teachers will be found some, who, through lack of judgment, will give lessons of unreasonable length to be prepared, or require a useless and injurious use of the powers of memory; these cases are exceptional, and are not of the individual and not of the system. It has been found, by investigation in other cities, that such complaints were without foundation, and that the evils could be traced to other causes. The mind is no less than the body is made strong by exercise, and it is worse foolishness to charge failing health in pupils to the account of intellectual effort in schools. Look rather to improper food and too late hours and neglect of exercise, to novel reading and other causes for the explanation, and not to the light tasks of the school-room. The average age of the greatest philosophers, inventors, statesmen the world has ever produced; the average of all the intellectual workers of the two continents, as given by statistics, show that mental activity promotes longevity. The lives of the presidents of the United States, of presidents and professors in colleges, of members of the learned professions, of graduates of colleges and of West Point, prove the same. It is time the old idea was abandoned. Scholars catch the infection, and, for doing too much, do nothing. Idleness both of body and mind is more injurious than work. Let parents look at the examiners for admission to the High School, where the attainments of years' school work are exhibited, and they will be convinced of the truth of the above.

Are you in favor of bringing large numbers of pupils together in one building, and do you think single rooms the best? Primary and Grammar School pupils should be in separate buildings, both to avoid confusion in school exercises and injury on the playground. Principals should not be required to walk a long distance; and in a building of four rooms will contain as many as can be col-

lected in one locality. There is no necessity of making pupils more than one flight of stairs to school, and it should not be. With a four-years' course in the Grammar department, and several promotions, eight rooms admit of a better classification than a larger number. A two-story building, containing eight rooms and a hall, is the most economical structure to build, and the cost for care and construction is less than in smaller buildings. There is no argument to be given in favor of double rooms in Primary and Intermediate Schools. The advantages claimed for large rooms in Grammar Schools are, the enthusiasm inspired by the large number, and the advantage to lower classes from hearing explanation and instruction given to advanced scholars. Experience has fully tested these different conditions, and the almost unanimous verdict is in favor of small rooms. The pupil loses more in attention distracted from his own duties, than he gains from instruction given to others. The chances for idleness and play more than balance the enthusiasm imparted by numbers. Much time is lost in changing classes, and the confusion caused, which does not occur in single rooms; a great time and attention of the principal is given to a great extent to government, which in smaller rooms is devoted to the work of instruction. I am aware that a school in a large room appears to great advantage on public exhibition days, but no one would be so foolish as to sacrifice the working power of a school for the entire year for a single day's show.

Is not school work degenerating into mere system, form, and process; in other words, is not instruction sacrificed for method? There is some foundation for this complaint, but far less than there was ten years ago. The earnest efforts of the best educators have been put forth to rescue the Public School system from the perils of the grasp of formalism, and with a good degree of success; a great deal more yet remains to be accomplished, as there is still a strong clinging to lifeless formalities and methods, obsolete in our schools. The tendency in all progress is to extremes. In coming from the almost entire want of system, method, classification of the past generation, the schools had reached almost the other extreme, where individual growth and development was lost in the evolutions and aggregate advancement. In avoiding Scylla we are in danger of Charybdis.

Text-books, graded into almost infinite series, containing subjects to be taught only the skeletons, which were to be fleshed from the ample storehouses of knowledge and vitalized by the imagination and illustration of the instructor, were put into the hands of the pupils. Experience has convinced educators that in a great majority

schools, the skeleton was neither clothed or vivified, and the children nothing except the dry bones to encourage interest in and increase the love for study. To remedy these defects, the best teachers throughout the country are expending more effort upon explanation, oral instruction, and in assisting their pupils in forming clear and distinct conceptions of subjects taught, by appealing to the senses through object-teaching, which belongs no more to the Primary School than to that of every other grade. Our schools, then, are not sinking into lifeless mannerism, but from it.

Most of our teachers are, and I presume will be, the products of our own school system. The course of High School study provides Normal instruction. It has been established long enough to send a class before you for examination. Certainly no candidates have appeared before the board, who showed more proficiency in the different branches in which the examinations are conducted. They are all employed in teaching, and although succeeding well, no one doubts that six months spent in a Training School—where, under the direction and subject to the criticisms of an accomplished teacher, they could have acquired and put in practice that knowledge of the work which years of experience have accumulated—would have rendered their services far more valuable to the city. Those who have gone from our Training School into the work, have fully demonstrated this fact and made the advantage of their preparation apparent. Nothing is wanting but that you should formally recognize the school, and require such preparation of all the candidates for examinations.

Almost every city in the Northern, Western and Middle States now provides for such instruction, and the school reports from those cities bring ample testimony of the advantages of the system. Mr. Albrick in the Boston report says, "The Training Department has proved a most important auxiliary in improving our schools." Mr. Fish of New Haven says, "Another year's experience exhibits more clearly than ever the vantage ground we have gained in establishing these schools." I will not multiply these quotations. The verdict elsewhere seems unanimous. I feel that there is no subject I am more present which is more closely connected with the future interests of the schools than this, and I earnestly commend it to your early consideration.

Next to a thoroughly prepared teacher, one who is fitted and has a love for the work, there is needed ample accommodation for all pupils. It is much to be regretted that there are in our city so many rooms poorly planned, and crowded with seats for a hundred or more pupils. No argument is needed for the superiority, in Primary

Schools, of single rooms, with ample floor and air-space; but these defects would be less felt, if there were not more pupils than seats. There are in the city eight hundred more pupils of the primary grades registered than there are seats for, and we can hardly expect a teacher to be enthusiastic in the matter of attendance, or successful in instruction, when three children are put in a seat comfortable for two. Children like to come to a pleasant, comfortable room. I do not believe in any unnecessary expense, but I know that true economy would be best promoted by furnishing ample and convenient school accommodations. If every ill-arranged, poorly lighted, uncomfortable school building in this city were to be torn down to-day, and replaced with plain, permanent, well-arranged, well-furnished and inviting school-houses, the increased efficiency of the schools in the next ten years would make ample return for the expenditure.

Grammar Schools.—There has been more board, slate and book work than in any previous year, and the pupils, interested through this trial of their powers, feel the stimulus of successful accomplishment, and work with all the ardor that the consciousness of their powers always gives, and which the memorizing of rules and facts can never give. No child cares to study a treatise upon the mechanics of rowing, with rules for its practice; but put the oars into his hands and show him how to use them, and he is at once interested. In the same way let a pupil test his knowledge in grammar by daily exercises in composition; in geography by map-drawing; in arithmetic by examples drawn from every kind of business operation, and in all branches by general exercises so conducted as to stimulate the mind to action, and to make individual acquirement common information. By daily exercise let him fix it in the mind so that it can at any time be called into use, and there is no department of study that will not interest the pupil.

It is frequently said of a pupil when he makes a mistake, "show him better." It is not enough to tell him; he should be educated to do it. It is not enough to tell a boy to go into the water and swim, unless we move his hands and feet, if we wish to teach him to swim. So in every branch of instruction; if we wish the highest results, we must possess the ability to do the work well, and then, by example and precept, train our pupils in the art and science.

There has been during the year a great advance made in the matter of instruction in the different branches, through efforts made by the teachers in this direction, as I trust the public examinations will abundantly show. No new methods have been forced upon the teachers.

have been hampered by no dictum; but in our semi-monthly teachers' meetings all the different methods have been fully discussed and explained, and the teacher urged to adopt that method in which, by trial, he found he accomplished the best results; as results, not methods, determine the efficiency of any school system.

The Grammar Schools acquire great consideration from the fact that so many pupils here complete their education. Not one-fourth of the pupils who enter the Grammar Schools ever go to the High School. Many leave during the first years of the Grammar School course. Hence the importance of thorough instruction in the different branches of study in this department, all of which are of the greatest practical utility.

High School.—It is difficult to speak upon a subject, where the most self-evident proposition is liable to be met with the geometric *modus est demonstrandum*," but one who has passed years of his life in a High School room, has a belief that unsupported assertion cannot shake. It may be rank heresy to argue that a practical education means more than a knowledge of dollars and cents; that the greatest interests of society and the ultimate wants of a community are not met, when all can read a newspaper and write a letter; that, in fact, civilization is not at its highest state, when, on the principle of division of labor, each knows nothing beyond his daily employment. I believe there are no useless studies in the High School department. Latin, Greek, logic, mental philosophy, may not be direct aids in business, but they cultivate the mind, strengthen its powers, and open the gateways to more extensive fields of knowledge, where, amid grander views and nobler thoughts, the intellect and heart are refined, the whole nature elevated, and the ability to exert an influence in the world increased.

The High School stands alone as the centre of influence and interest among the Graded Schools. Not only is its influence felt in the other schools, both by pupils as the goal of their ambition, and by teachers as the exponent of their system and the culminating point of their labors, but all the schools are judged, as to efficiency, both by the citizens and strangers, by the scholarship and character of the High School, and the estimation in which it is held. Increase the power and influence of this school, and the stimulus will be sent coursing through every artery of the school system. Degrade it, weaken it by withholding means or influence, and you will inevitably weaken the other schools.

If you wish all the schools of the city to be elevated and improved, strengthen by every means in your power the influence and efficiency of this school. Let a building worthy of the city be provided, all the

means necessary for the highest culture be procured ; let every effort be done that is needed to give it the full confidence and support of every patron, and make it an object of pride to every citizen. Then you will see every school-room in the city permeated with intelligence. It is worthy of more confidence and consideration than it receives. Few schools in the State do better work, but it needs more means. Above all, let there be some standard of admission established, so that the entering class will not represent all degrees of preparation. It is an injury to any pupil to enter upon high school work before he is thoroughly fitted ; and it is a grievance to those who are qualified, and a great detriment to the efficiency of the school, to have the time and effort of the teacher, which ought to be devoted to appropriate school work, devoted to imparting instruction to those who should have been obtained in other schools.

Evening Schools.—For several reasons, the Evening Schools of the past winter were more successful and satisfactory than those of the winter previous. Books were furnished by the city, which not only prevented the loss of time, experienced the year before, in organizing, but also secured greater uniformity in the books and a better opportunity for class and general exercises.

The pupils being distributed in three schools, no room was crowded, and the number of pupils to a teacher was less than half that in charge of one teacher in years previous. Although this arrangement doubled the expense of the schools, yet the amount accomplished more than compensated for the outlay.

Such schools cannot be classified or taught like a Grade School, therefore a teacher cannot do justice to so large a number of pupils as he could take charge of in a day school. Much individual instruction and attention are needed, and an average attendance of twenty pupils is as large a number as should be given to one teacher for the best results are to be secured. The schools during the past year were well managed, the pupils were orderly and attentive, interest and progress were marked and satisfactory. The average attendance in the Osborne Street School was higher than in either of the other schools, although the number over eighteen in the different schools was small. There is a desire on the part of all who have experienced the value of an education to avail themselves of every opportunity to acquire knowledge. If this desire is properly met and encouraged, it is probable that a large proportion of those who spend their evenings in loafing our streets, and in still more questionable amusements, would be gathered into our schools, where they would be getting improved as individuals and as citizens.

To accomplish this desirable result, it would be necessary not only to organize Evening Schools, as during the past winter, with an additional one in the eastern portion of the city, but also to make separate classes in each school, or establish a separate school for those over twenty years of age, where they could be taught not only arithmetic, reading and writing, but also philosophy as applied to mechanical operations, chemistry as applied to the arts, and receive such other information as would be of use to them in their various employments. I believe that instructors can be obtained in the city for such a school; and when we witness the eagerness with which so many of ripe years avail themselves of the opportunity to obtain a knowledge of mechanical drawing, can it be doubted that they would with equal zeal seek to acquire knowledge of other subjects, equally important and useful to them? There is a natural and excusable feeling which prevents them from entering a school composed in a great measure of younger pupils; and even if instruction was given only in the common branches, many more than those above the age of twenty would attend, if the school was organized expressly for them. No attempt has anywhere been made, to my knowledge, to establish such a school; except in those cities where a Mechanical School or Institute of Technology has been provided, to give thorough and complete instruction to adults in the different departments of knowledge.

The time will come, and at no distant day, when such an Industrial School will be felt to be a necessity in Fall River; but until such time, there not be such a system adopted as that proposed, which shall afford opportunity, during the winter season, to all those engaged in the different departments of industry, to acquire that knowledge denied perhaps to them in youth, but which would be of the greatest value to them now, and which they are most desirous to obtain? I commend the subject to your consideration, fully believing that in no other way can money be better expended than in adding to the knowledge, and thus increasing the skill and elevating the lives, of those who not only by their labor add so much to the wealth and prosperity of the city, but also by their intelligence and industry determine in so great measure the character of the community.

Mechanical Drawing.—During its session of 1870, the legislature of Massachusetts enacted the statute, entitled, An Act relating to Free Instruction in Drawing.

The school which you have recently organized, in accordance with the above named statute, has proved a gratifying success. The number in attendance, 178, is far beyond the anticipations of the most sanguine, and nearly all are from the ranks of the mechanics of the

BOARD OF EDUCATION.

7, the average age of the class being twenty-three years. The object of the training in this school must be to improve the pupils in all the departments of labor. Several cities, among which are Boston, Charlestown, Cambridge, Worcester, New Bedford, and Weymouth, have organized such Evening Schools, and secured favorable results. Fall River has been among the first in establishing evening classes in free-hand drawing, which are largely attended by mechanics who are to instruct the pupils of their several schools in this subject. It will not only prepare them for their duties in this department, but will stimulate to more preparation and greater thoroughness in other branches.

Factory School.—This school steadily increases in influence and usefulness. The divisions come regularly from the mills, comprising a great measure, of the same individuals as those of the previous year; and who, contrary to what might be reasonably expected, have lost but little during the interregnum, and are able in a few instances to take up the school work at the point where it was left, and thus make marked progress from year to year in their studies. This systematic organization of the school has allowed more freedom to the teachers for general exercises in geography, arithmetic, history and other subjects, which have been a marked feature of the daily school work during the past year. It does not seem expedient to make these branches regular studies in the school, as the school-term of three months would not allow the pupils to make progress in the text-books, if the time was divided among so many studies; but, in a ten minutes' exercise of the whole school, both in the morning and afternoon, very much useful information can be imparted on these and kindred topics by the teacher, which is understood and retained by the pupils, as those who have been present at the examinations during the year will testify. This exercise I hope to be able to make more extensive and systematic the coming year. The school has been visited during the year by many members of school committees of different cities in New England, by educated members of the State legislature and State officials. All have been deeply interested in the working of the school, and pleased with the evident interest and progress of the pupils. School officers from Weymouth, Me., Manchester, N. H., Lawrence and New Bedford, and from other cities and towns, have visited the school, received information in regard to methods pursued, obtained copies of the blank forms used; and in some of the cities named, schools have been organized upon the same plan. Connecticut has passed a law similar to that of Massachusetts, and the manufacturers throughout

te have coöperated as cheerfully and efficiently as our own manufacturers in providing this system of schooling for factory children, and have agreed to employ no children of school age unless they bring certificates, showing that they have attended school three months during the year. Rhode Island is moving in the matter. New Hampshire has such a law in force. New York and other States are agitating the question, and the subject will soon be brought to the attention of Congress. It is to be hoped that soon there will be found no place in the United States where parents, through wilfulness or cupidity, deprive their children of an education which is so fully and liberally provided for them. In New York City there are thousands of children, under ten years of age, employed in unhealthy work and in ventilated rooms. The interests of humanity demand that this evil should be met with the full strength of law.

School Attendance.—It is with some chagrin that I present the results of all efforts made to abate the great evil of irregular attendance, which to such an extent neutralizes the efforts of the teachers in their school work, degrades our schools in rank and scholarship, and increases the average expense of tuition. I have but one consolation, that, but for the attention given to the subject, the results would have been far worse than they are.

The most discouraging feature in the matter is, that there is no remedy which school authority has the power to apply. There are a few cases of truancy, and these are promptly attended to by the officer appointed, and the attendance of those who are members of the schools, from week to week, is as good as that of most other cities. The trouble comes independently of the influence, to a great extent, of the teacher or truant officer. More than twelve hundred children of school age, employed in the mills and other establishments in the city, attend school but three months in the year; this cause alone would reduce our attendance at least twenty per cent. In addition to this, many of the parents of the children in our schools do not value the advantages of education afforded them, nor understand the evil of irregular attendance, but keep their children at home to tend the fire, to run on errands, and for a multitude of more frivolous pretexts, while they work in the mill, and, even if their children stay away of their own accord, will interpose parental permission between the child and the truant officer.

Such cases, and they are almost numberless, are beyond the control of school authority, but they are most pernicious in their influence upon the schools. It is not alone that these children are found upon the street and at the wharves during school hours, or following hand-

organs and playing about school-houses, enticing other pupils from school, but they return to school, after an absence of a few weeks, either to add hours of labor to the teacher, who is sufficiently taxed, or to take a part of the time which belongs to the school. Throughout the State at least one-fifth of the whole of the Public Schools is lost through absenteeism, and here one-fourth; and yet these parents claim that the schools are free, that they have a right to send their children when and as they please. I believe that neither law nor justice is rightly interpreted by the practice. Men, without children in school, pay taxes for the education of the children of the city, that the community and State may be benefited by a more intelligent citizenship; and the community and State should see to it that such money is not squandered. The schools should be conducted with a view to the greatest good to the greatest number, and no child has a right to deprive other children of their share of instruction.

Is educational work keeping pace with the other elements of higher civilization, in the march of human progress? Are the people of the country moving on with the great current of reform, or are they thrown into a circling eddy, to be ever revolving and never advancing, while human need seeks some other aid to progress? A great part of humanity, in its struggle for a higher, nobler life, was met by the Common School, and no other agency than the Common School has supplied the want. They are the nation's lungs, and through the million school-houses scattered over the land is drawn the pure air of truth, honor, love, virtue, temperance, honesty, refinement, culture, patriotism, which purifies and vitalizes the life current of so many political systems. Because they have met this want, and exerted their transforming power, the money and influence of the noblest nations in this and other countries, have been given, cheerfully and freely, to sustain and elevate them.

In arts of peace and arts of war, that nation is the superior which the school stands side by side with the church in every village. In our own struggle for national existence, it was a contest between the spelling-book and the whip; between knowledge and ignorance. France, the home of the refined and cultured few, whose power, a few years since, astonished the world and gave them the first place among the warlike powers, has been humbled to dust by that nation, heretofore so often vanquished, but whose children for the last generation, have been drilled in the Common School, whose intelligent army has proved invincible. No less are such nations superior in arts of peace. At the Paris Exhibition in 1867

tions, in manufactures and inventions, arts and sciences, were so much in advance of England, that her manufacturers became alarmed; and in 1868, a committee of nineteen was appointed to inquire into the provisions for giving instruction, in theoretical and applied sciences, to the industrial classes. The superiority of France, Switzerland, Belgium, Holland and Germany, in all branches of arts and manufactures, was conceded to be due to the elementary instruction which is universal among the working population of those countries, and to the scientific training of the proprietors and managers. Says Professor Randall, "England will be outstripped, both in arts of peace and of war, by the continental nations, in virtue of their better education." Says Mr. Huth: "It is the want of industrial education in this country which prevents our manufacturers from making the progress which other nations are making. With them, it is not a machine that works the machine, but brains sit at the loom and intelligence stands at the spinning-wheel. Our best machines are improved upon by men who have had the advantage of a superior education." Look we to our own country, rich in all the varied resources, agricultural and mineral, essential to the comfort, growth and supremacy of a nation?—What but universal education, thorough and practical, is wanting to place us as a nation, in every department of human enterprise, in wealth, power and happiness, far beyond any other people of the earth? The richest soil invites intelligent labor; untold mineral wealth is waiting to be wrought into forms of beauty and utility by the skilled artisan; the freest government the world knows removes all obstructions from the path of enterprise, and by equal and just laws encourages the humblest and poorest to compete for the highest prizes of skill and industry. What is our present educational want? The Board of Education in our State says: "That we are far behind many other nations in means of art culture, is very evident. We have few models, museums of art in our country, to which students can resort for study and instruction. Our nation's artisans and mechanics feel this neglect. Foreign workmen occupy the best and most responsible places in our factories and workshops. Much can be and must be done for the present generation of mechanics. We have no doubt that the greatest good will be accomplished by proper instruction in our Public Schools, and our chief efforts should be directed towards this end."

The introduction of free-hand drawing into the Public Schools, the establishment of schools for mechanical and architectural drawing, and of Industrial Schools and Institutes of Technology throughout the country, show the determination of our progressive people to

provide for these wants which are now being felt ; but through above all, comes the complaint that the Public Schools are progressive enough nor practical enough ; and the prospect is, less Grammar and High Schools and Colleges devote more to the practical methods, and less to abstruse theories, a large portion of their pupils will seek instruction elsewhere. Colleges and private institutions perceive the danger, and avoid it by providing to meet the new demands ; and Public Schools and Public teachers must be progressive, or ignominiously fail. The information obtained in the Grammar Schools must be more varied and thorough, and High Schools must develop more and more into Scientific Institutes. Teachers who wish to succeed must be fully read up in the discoveries and inventions of the day ; laborious students in all departments of knowledge ; and above all, complete masters of each branch in their own departments. Text-books, in the preparation of which a better knowledge of the development of the mind is exacting, replete with the latest information, and less cumbered with quibbling, prolix explanations and obscure definitions, must be had. We believe, will be the imperative demands of the next decade of progress, and the Public Schools must be prepared to meet them.

Public Schools are the great civilizing force of the present age. Freedom without them becomes anarchy, and liberty becomes license. Whether we view them while Socrates taught in the streets of Athens and died in attestation of what he taught, or while Arnold sacrificed his life in a corrupt age the divine beauty of a manly life, we see them as the truest index of the intelligence of the people, the surest sign of progress, and the most certain means of their advancement. In all other institutions of society, the Public School had its origin in necessity, and has been developed rather than formed. The past should not limit its progress, for it adapts itself to the multiplied wants and necessities of to-day. It should be regarded as an institution of the State, and as a necessary condition of the national life. The recognition of its necessity should pervade the public mind, and become a common living verity. It should be the nucleus, around which should gather all that refines society or beautifies life. The affections of the people should twine around it, and their hopes cling to it. Let all learn that education is the stock that will support whatever the wants of society may require to be engrafted upon it, and then labor to improve our schools, as the surest means of promoting all legitimate reforms ; and the senseless excitements and wild fanaticisms which often sweep over the land would cease, and there would be a new intellectual life and a fresher moral beauty.

Superintendent.—M. W. TEWESBURY.

FREETOWN.

this town would rise in intelligence and prosperity, wisdom certainly directs that she should foster her Common Schools by providing fully for their support, and encouraging, compelling if necessary, attendance of her children.

School Committee.—REUEL WASHBURN, SYLVESTER R. BRIGGS, THOMAS G. NICHOLS.

NEW BEDFORD.

Drawing.—It was not expected, when drawing was introduced as a branch of instruction in the schools, that every scholar would become an artist, or make art the study and business of life. Nor was it deemed to give it such importance as to prevent a proper attention to other branches of knowledge. We do not forget that there is another side to a simply practical side of life, and that it is our duty, as educators, to fit the children in our schools to enjoy life, as well as to be useful in it. It is impossible to overestimate the moral and æsthetic advantages of being educated to appreciate beauty—beauty of form, of outline, of fitness and proportion. But aside from all this, the knowledge of the rudiments of drawing, and some little skill with the pencil, are valuable practical aids in the business of the world.

They constitute another means of communicating and expressing thoughts, and enable a person not unfrequently to convey an idea not easily expressed in any other way. So great advantages do those who are able by a few rapid and telling strokes with a pencil to express a thought or illustrate an idea, that we are of the belief that elementary drawing is as useful as arithmetic or grammar, and should be taught to every scholar, not as an accomplishment, but as a practical branch of knowledge.

Truant Officer.—In compliance with the request of the school committee, and in part at least to remedy this evil, the city government appointed Rev. Isaac H. Coe as truant officer. Mr. Coe accepted the position with the understanding that he was to act rather as a friend and adviser than in any police capacity. In such a spirit he has directed his efforts not only to reclaim the truant, but to affect the parents and guardians, through whose indifference and neglect the evil is chiefly caused. So far as we have been able to judge, he has labored with faithfulness, tact and discretion, and from a spirit of true benevolence and kindness, and much good has been accomplished. In an officer cannot well be spared in a city like ours. The expense of his labors cannot be weighed against their efficiency and success.

We have truant laws and truant officers for the same great purpose which we establish schools, not to punish crime, but in so far as possible, to prevent it. It is a part of the school work and discipline, not a police system to bring offenders to justice, but a reformatory system, tending to educate and employ the child, and prevent his becoming a criminal. Such being the case, the truant laws should be executed by the school board, and the truant officer should be under their control and direction, and his report should be made to the board.

Chairman.—GEO. H. DUNBAR.

The Principles on which our Schools are Governed.—It is my purpose while to make a brief connected statement of the principles to which I have referred; for while they have severally been treated in our official publications, I believe they have not been all put together, as they stand related to each other, and as they constitute the foundation on which we are striving to rear the structure of a model American school system, and possess schools that shall adorn that system. It is all the more desirable to present these principles in this connected form, because it is to a want of comprehension and thorough appreciation in regard to them, and consequently to laxity in carrying them into effect, that the chief defects of our Public Schools in general are to be attributed. Moreover, even when they are valued and regarded, there are influences ceaselessly at work to induce school committees and teachers to be faithless to them, in the pursuit of action that will serve some temporary purpose, or accomplish some showy results. It is well, therefore, that these grand primary principles of inspiration and guidance should be clearly and impressively stated.

I. The first great principle to be placed on record is, that Public Schools are for the development and nurture of true and noble citizenship.

It has been truthfully pronounced by judicial authority, that it is not only the political advantage to be derived from the diffusion of education that justifies the imposition of taxes for educational purposes. The support of Public Schools is made imperative on every citizen by the duty of citizenship. The minds of the people must be enlightened enough to appreciate their sacred responsibilities, and their hearts high-toned enough to set a true value on the boon of education.

The question, then, comes up before us at the very start, what must the work of education be, in kind and manner, to accomplish this sublime result of fashioning good citizens?

First, let us consider what it must not be. It must not be confined to the intellect alone; for history proves, in many a damning instance, that the most dangerous, because the most plausible and insidious

ts in society, tending to its degradation, are to be found where ly cultured intellects are united to corrupted and immoral hearts. must not be preparation for lives of naked utility alone; for a rful content prevailing among its citizens is one of the prime safe- ds of a state, and the instrumentalities of happiness must be put ossession of its children, as well as those of practical usefulness. ust not be the culture of the immaterial part of our being alone; e healthful and effective mental condition is dependent on a health- physical condition, and the soundness of the body must be cared if only for the interests of the nobler powers.

he whole being, therefore, in all its various parts and capacities,— d and body, intellect, heart, taste, moral power,—is to be the ob- of regard, when the child stands before us to be educated for a er of noble citizenship.

pass on to remark that this fundamental truth has seldom been pted as such, seldom has been found to dominate, with shaping guiding influence, in school affairs; for the grand desideratum the great majority of school committees and teachers, at this moment, is highly to discipline and culture the mental powers e. Any attempt to train the æsthetic side of our nature is widely rded as a gross perversion of the true economy of education, e to hold in esteem a condition of happiness, as a normal object e secured by a system of education, would be even more widely natized as the crude vagary of a diseased imagination. Practical ty, and that of the lowest and narrowest type, exhausts the con- ions of the largest class of minds on the subject.

nder the influence of this condition of public opinion, many ols are managed for far other ends than the real good of the e people. Here, for instance, is a community in which the ial aim of the instruction given in the Public Schools is to force e minds which are capable of the strain up to an exceptionably standard of scholarship. All regard for the common weal,—all ideration for individual interests,—is sacrificed to this unjustifiable ition. Mediocrity and misfortune, as well as laziness and stupid- are rebuffed, disheartened and pressed back. Glory enough is for committee, teachers and schools, if a few only make a bril- exhibition of the culture secured at so much cost. The onward ement of a school working for such an object is like the forced ch of an army in a military exigency, when, if the vigorous ority reach the destined post in the prescribed time, all is well;— matter how many have dropped, faint and foot-sore, by the way.

other instances, indifference to the great truth we are consider- and the vital influence it should exert, results in suffering such a

petty motive as the reputation of the school, or of the teacher; the main stimulus to exertion, the inspiration of the vital life of the school; and, as before, a system of artificial and heartless discipline obtains, at the expense of individual needs and the general good.

But what is most damaging of all, under such dominating influence is the word discipline, as applied to a school, acquires a fearful and restricted signification. Instead of implying that all the good and most renovating moral forces which the teacher can command are brought to bear for the production of that noblest of all fruits of education, a high-toned, refined and admirable character, it is limited to mean only the security of so much order as may be requisite to accomplish the culture of the intellect; while any exhibition of the graces of character is held to be only an incident, pleasing to the eye where it occurs in connection with the paramount purpose of the school, but by no means to be provided for and anticipated as one of its chief purposes and normal effects.

II. The second great fundamental principle that underlies our school system is, that the order of nature, in the development of our powers, should dictate the character and relation of our process of instruction.

Thus, as nature first operates through the perceptions, then through those acts of the understanding which are termed judgments, and only when youth is blooming into maturity does it begin to deal freely with pure abstractions,—so educators must follow this order, so that the little folk in Primary Schools are addressed through the senses, and not until they are well along in their school career are thrown upon processes of abstract reasoning.

This vital truth, long disregarded, is fast receiving the attention of our demands. None are so wedded to old errors or blinded by prejudice as to deny its claims. With us it has for years been one of the chief springs of our primary instruction; and I shall dwell on it long enough to direct attention to a serious error into which some of our teachers have fallen on the subject.

Because nature develops our mental powers in the order here stated, there are those who insist that during the first years of Primary School life no endeavor shall be made to lead the child to reason in any wise, neither shall their memories be taxed; the instruction they receive shall be exclusively confined to appeals to the perceptions through object-teaching. At a later period their reasoning powers are to be called into exercise, and after still another period their reasoning powers. This is the "Oswego" plan.

Now I do not hesitate to say, as the result of my observations and experience, that nature justifies no such extreme.

To practise it is inevitably to cramp and narrow the range of instruction. Because nature takes three successive steps in her process of development, it by no means follows that she does not run those steps to some extent into each other. In fact, we know well that she does so. The child reasons, after a fashion, from a very early period of its life. The generalizations which it is constantly making from the facts which it has learned are all processes of positive reasoning. Perhaps there is one reservation that we shall be compelled to make, namely, that the very young scholar reasons only from sensible objects, while the mature mind reasons also from immaterial conceptions.

While, therefore, we have a wise regard for the course of nature, we must not so strain our methods as to *outnature* nature. Of course we must not expect a great deal of our little children in this direction, but they cannot too early be initiated into the habit of using the objects and facts that come within their knowledge as data to reason from. It is such a habit, in good part, early and imperceptibly formed because of the intellectual atmosphere in which they have lived, which renders the scholars in our schools from cultured homes so much more prompt and ready in their school exercises than others are. They have learned to think,—that is, to reason. On the other hand, there are many an illiterate person, who goes all through life with eyes in his head and a brain behind them, yet never makes any deductions from his impressions on his senses,—and is to the last hour like a little child; because he has never learned to use his senses as the light-houses of his mind.

There is a further thought in this connection that I feel sure will meet your approbation as a suggestion to be heeded by the teachers of the more advanced classes in our schools. Because youth, when they have become somewhat mature, are able to reason comparatively well, it is too often the case that their teachers think it quite unnecessary tactically to illustrate the instructions they give; trusting to the imaginations of the scholars to furnish them with sufficiently accurate conceptions of the realities connected with their school work. But the mind can never be relied on to form accurate conceptions of material objects that have never been known to the senses. No verbal description is competent to picture those objects, in correct outline and proportions, to the ordinary mind. Of a consequence, the conceptions which scholars form of material things referred to in their text-books, if they have never seen them, are for the most part vague, shadowy, distorted or grotesque. Indeed, if these conceptions, even in relation to subjects so familiar that the teachers would scarcely think of making any explanation about them, were to be accurately delineated on paper as they occur from day to day, they would often

prove so diametrically, perhaps so strangely, at variance with reality, as to excite our hearty laughter; provided the realization of the terrible defects in the methods and results of education is revealed, did not associate the subject with thoughts too painful for any admixture of mirth.

This is one of the secrets why so much of the instruction in our schools, even in the higher grades, produces only indefinite and unsatisfactory results; and, even though it may effect a lodgment in the mind, is likely soon to drop, lifeless, out of it; for the descriptive language of the school-books has no point on this account, vivid, commanding significance. Such language, therefore, must make a permanent impression, to become a part of the mind's intelligible available vocabulary.

If, then, the last stage of the process of nature in mental development is, under due limitations, to be associated with the first, the first is invariably to be associated with the last. Object-teaching—in its true sense,—to the last moment of a scholar's career! Our teachers, even those of the graduating class in the High School, never to let a descriptive word or phrase, that is of importance in the progress of their class, pass by without having tested what conceptions it has suggested to their minds, and either by a definition on the blackboard, or still better by a display of the real thing, if possible, to so endow the words which have suggested those conceptions with accurate and vivid significance, as to enroll them, as words of definite ideas, among the permanent and available furnishings of the mind.

III. The third fundamental principle to be noticed is, that there is an organic unity running through nature's processes of development, so an organic unity should comprise in one system the whole the several ascending grades of the schools.

This is a vital point indeed. It used to be very generally regarded, except in a loose and ineffective way. The several schools pursued their work, each for itself, on quite an independent basis, having no unifying relations to what had gone before or to what was to come after.

But educators now feel that every onward movement in the Primary School is, as it were, a throw of the shuttle in the weaving of a fabric that is to receive its finishing touches in the High School. If the weaving be badly executed in the Primary School, all that may be exercised upon it in the High School may not repair its weakness or remove its deformities. The best of teaching, even in the lowest classes of the Primary School, is that which furnishes the High School fit material for its work!

but it would be idle to emphasize the principle before us, and expect to find it a modifying power among our teachers, unless the compensation allowed them indicated a conviction of this substantial equality in the value of their labor. To put it oracularly forth in the school reports, as some school committees do, that the work of Primary schools is of the last importance, and at the same time employ as teachers of those schools half-fledged girls, at a contemptible rate of compensation, is a logical absurdity such as intelligent men should be ashamed of; for the words will always weigh less than the dollars. Whenever grammar teachers are paid more liberally than primary teachers for the same amount of service, it will be counted promotion if transferred from the latter grade to the former, let solid conviction on the subject be what it may.

I heartily rejoice, therefore, that the subject of the just relative compensation of our teachers has been thoroughly considered by the Board, and adjusted so as to indicate, as nearly as possible, your own sacred convictions, and that I have been able to announce that the differences which now exist are to be referred solely to one of two causes: First, the cost in time and money of a thorough training in classical and modern languages and the technical sciences, to prepare one to teach those branches, which demands a proportional increase of pay. Second, the greater comparative draft made by the advanced classes on the time and endurance of their teachers. No discrimination whatever is intended by those differences as to the degree of ability and general culture of the teachers, or the relative importance of their work.

7. The fourth vital principle to which I will advert, is this: that the various studies prescribed for our schools shall be carefully apportioned to each other according to their relative values as branches of the education.

The simple statement of this principle is sufficient to commend it to every intelligent mind as of indispensable importance. Certain it is that every study is not of equal value with every other, and all should not receive an equal amount of time. Still more, those studies which are of secondary consideration should not be accorded the foremost place.

It has not been until within a short period that this subject has attracted any definite attention, and that the studies have been regulated accordingly. Arithmetic, in most of the schools of New England, had come to usurp the foremost place in general esteem, and actually to consume from a third to a half of their whole working time; as though the main object of all human lives, male and female, was to perform operations with figures. Grammar had come to be

an attainment of marvellous importance for its own sake; to parse a sentence accurately was held a more praiseworthy achievement than to read it intelligently, or explain it understandingly. For spelling, with the hardest words that could be culled from the vocabulary, were subjects of enthusiastic applause, albeit the meaning of the words, so finely spelled, might be understood. And while, processes to communicate a knowledge of the mother tongue, whose symbols are almost the sole instruments through which we communicate with mind, the repositories of the literary treasures of past ages, and the vehicles of present intelligence,—by far the most important, therefore, of all knowledge,—were almost utterly neglected and unattempted.

The relative values of the several studies pursued in our schools may be quite clearly and definitively ascertained and established, if they are determined by great general interests, and qualities and powers of mind that are common to all. And taking carefully into view all the elements that should enter into the solution of such a problem, we have prescribed a curriculum for each grade, that indicates not only the studies to be pursued, together with their specific uses, but also the relations of each to the others, and the relative attention each should therefore receive. Thus we endeavor to guide our teachers into such channels of effort as shall result in a rounded and systematic cultural culture, adapted to evolve the powers of the scholars in the best manner, to communicate the intelligence most to be desired, to serve the highest interests of the community, as well as of those committed to our charge.

V. The fifth fundamental principle by which we are governed in our administration, is, that in the teaching of every study, the teachers shall have regard for principles more than for processes.

Does it seem like trifling to put forth a proposition like this? Can any one say that it has so long formed part of the very alphabet of the work of education, in every quarter, as to render its proclamation unnecessary? In words, it has always had place among the maxims of the work of education; in practice, seldom. The majority of our text-books, of both the past and the present, have been written in conformity to the opposite statement, viz.: that processes are of more value than principles. More than half the schools, everywhere, have been and are still taught in the same vicious conformity. For are the ramparts behind which ignorant and lazy teachers have hidden themselves from the missiles of criticism, the demand for earnestness and the blunders that such effort, in their case, would involve? That class of teachers are not, by any means, all dead yet.

Therefore, the proposition should be proclaimed, as from the very setops :

Principles rather than processes, in arithmetic! How many arithmetics have been in popular use, in which the statement of each topic has been followed immediately by the rule by which to perform the work; and how many teachers have required these rules to be learned in the same order of arrangement, before a single idea of the philosophy of the operation had been given to their scholars! How many of the same arithmetics, too, have been lumbered up with a variety of processes to arrive at precisely the same results, and the scholars have been put busily through them all, as though these different roads to a common landing-place were each an avenue to new and untried acquisitions.

How much time, too, has been spent in "doing sums," all after a common pattern, after the process had been already thoroughly mastered! Oh the fearful waste from all these wretched travesties of instruction!

We forbid the imposition of more than one formula by which to perform the same class of operations; and have prescribed, also, the following golden regulation:—

The definitions in the arithmetic are to be committed to memory, after having been clearly and sufficiently explained; but the rules are not to be committed to memory. If they are required to be memorized, it must be on the ground, not that they are methods by which to perform operations, but only a concise way of stating those operations. The rule, therefore, is never to be memorized, in any event, until after the principle has been thoroughly elucidated. And, in all cases, if a scholar is able to elucidate and exemplify a principle, it shall be rated as a defect that he is not also able to repeat the rule."

Principles rather than processes, in geography! How many of the most popular geographies have been chiefly made up of disconnected statements upon details having little or no apparent connection with each other, intelligent generalizations, and only printed for the sake of filling out the material for a good-sized book! What terrific impositions have been made on children's memories of the positions of places, of their directions and distances from each other, without a word as to their historic relations, or of what value they are to themselves or to the world; of the names and positions of rivers and mountains, too, without reference to their uses in the great economy of nature, of commerce and of civilization! And so forward about every portion of the subject.

We set our faces against this dull, unintelligent monotony of work. We insist that whatever may be taught on the subject, be it much or

little, shall be taught so as to cast upon all details the ill power of the association of ideas derived from their natural, or historic relations, and thus impart to them vital character and

Principles rather than processes, in history! Just as geographers have dealt chiefly with characterless details about the earth's surface, the school histories have presented to the memories of the pupils as their most important staple, a sequence of dates in compact and arid facts, associated with nothing to engage the imagination or to press the memory. But this topic is worthy of special discussion, and will have more elaborated consideration in a subsequent part of this report.

Principles, once more, rather than processes, in reading! The modulation more than the manner of giving expression to the thoughts of ideas? And in what numberless schools, past and present, the entire thought and purpose of the teachers, in connection with their lessons in reading, have been limited to exercises upon models of high attainment in that being regarded as exhaustive of the necessities of the study. And all the while the meaning of the words, whose right expression engages so much ardent enthusiasm and is so elaborated drill, is a subject of very little thought or care; the teachers enunciating, with very nice discrimination perhaps, words and phrases that convey no definite images to their minds. Oh, the absurdity of all this;—and alas, the frequency of it!

VI. There is one further and crowning principle to be considered, viz.: "As is the teacher so is the school;" and therefore no teacher shall be appointed who is not thoroughly competent for the work.

A time-worn adage is the first clause of this proposition; time has been conceded, yet seldom strictly regarded. And wherever the schools are carried forward without any settled principles on which the system has been organized, and with which their methods and progress are ceaselessly compared, it is possible to go limping along with incompetent teachers, without betraying how much of what is defective and unsatisfactory is owing to that incompetency. We have reached that point in progress where the conditions under which our teachers are at work are so distinctly defined, and withal so favorable to success, that the state of each class indicates with perfect accuracy the manner in which it has been taught. And so marked differences that prevail, consequent on the differing degrees of culture and aptitude in the teachers, that the adage through which we have expressed, in part, the principle under consideration, has acquired a force in our minds that carries along with it a deep and convincing sense of responsibility. We seem to hear a pleading voice from every school-room: "Give us teachers who will do us justice.

with us elsewhere; let not that crowning requisite of a good school
s. Let not poor teachers set at naught the advantages we pos-

We will honor our schools and our city, if only we have the
ance we require. And what some are favored with, let all equally
r. Amidst the general success and progress, let there not be
and there a class stationary, without ambition or life, its oppor-
ties unimproved, its precious time misspent,—not because of any
in itself, but because it has been subjected to the control of in-
competent teachers!"

ch are the foundation principles on which the structure of our
l system is reared, and in accordance with the spirit and de-
ls of which their supervision has been conducted. And with
a basis, and with all the parties concerned in their management
control working together with a live enthusiasm to produce the
t possible fruit from conditions so advantageous, it is inevitable
we should have good schools. One need know nothing of them
ically; may never have witnessed their work or even entered
precincts; and yet he has data enough to inspire confidence in
worth.

the Study of Language.—Our teachers do not need to be re-
ed that the standard study of our course, that which we regard
once the foundation support, the embodying medium and the
bling crown of all others,—is the study of our mother tongue.

is is not the first time that I have brought this important subject
e attention of the board and of the teachers. It has been care-
considered in previous reports. It is also referred to explicitly
e Manual. I have endeavored to set forth, in its true light, the
relations of a good knowledge and command of language to a
l education, and the wretched anomaly of sending out our gram-
scholars—and even, it may be said, our High School scholars—
the world with so meagre a vocabulary, and so wanting in the
r to give correct and free expression to their thoughts, that
gh they have been devoting years to the acquisition of an educa-
they seem to have learned little or nothing to any good effect.
as for the love and pursuit of high-toned, improving literature,—
best evidence of culture and its best service too,—they have not
ne familiar enough with language, as the vehicle of the pure and
iful in thought and sentiment, to enjoy it and to crave more of
its noble and beautiful relations.

ecur to the subject, because the more one studies into its facts
merits, the more its importance arrests the attention; and the
ion rises anxiously in the mind, What course shall be taken to
ly these defects, and better supply the needs of our youth?

Many educators are content with prescribing a course of literature for the High Schools. But this will not fully accomplish the object. For, in the first place, it reaches effectually very few of those who need its agency. More than half the scholars who actually enter our High Schools leave them before such a course of study can have opportunity to render them any material service; while a still larger number who cease their schooling with the Grammar Schools, are not favored with its influence at all. In the second place, their very ignorance of language prevents most High School scholars from being greatly profited by what may be called, in any true sense, the study of literature. It is entirely beyond them; and instead of anything so ambitious, they need to be subjected to a course of study which shall have for its special object the elementary work of enabling them judiciously to enlarge their vocabularies, and to have the power to acquire the knowledge of in full and free command.

Not until then will they be in a favorable condition to understand and appreciate the forms of expression in which our classical authors have clothed their thoughts, and be competent to enter into the study of literature. * * *

The exercise of "reading" ought to be the chief agent in the service required; but its opportunities are insanely cramped and limited by the way in which it is prepared for and conducted. Committees prescribe a certain series of text-books in reading for the schools, and each one is to be finished before the next can be commenced. There are usually five different books in each series; ranging, in their graded application, from the little A-B-C-darians to the highest in the Grammar School. So these five books constitute the whole amount of the specific instrumentalities for intercourse with literature that are provided for our scholars for nine long years! Then, in addition to the pieces of which these volumes are composed,—and these are didactic essays, or sublimated forensic speeches, having no relation to a child's thought and sympathies. And the narratives, the rest become well known long before they have served their purpose in the reading class, and are at length as stale as bread that has been kept until it is mouldy, and are as little calculated to whet the curiosity of the mind, which is the normal medium of its improvement, as such bread is to stimulate physical desire. So that words which picture the absolute loathing with which each volume comes to be regarded by the great majority of the scholars, long before they come "finis" enables them to cast it aside for the next in order.

What leads to the exercise of the physical energies in the procurement of food? It is appetite. And in like manner it is curiosity which stirs the intellect to its acquisitions, and which

be relied on to urge our scholars forward in the race for an education. The old adage, "You can lead a horse to the watering trough, but you cannot make him drink," applies with special force to the case before us. Compelling our scholars to feed, month after month, with such distasteful aliment, we bring them out to their reading lessons, and they go through them, parrot fashion, learning from them comparatively nothing; for there is nothing to excite that eager, discriminating sharpness of attention, which alone can make reading lessons of advantage as a means to the knowledge of language.

Little children come to our schools from a portion of our homes, and are not only able to read without effort, but who seem to possess a wonderfully full vocabulary for brains so youthful. And how has this been brought about? Have the parents of such children kept them poring for years over two or three books, making a hateful task of each successive page,—books that range perhaps considerably beyond their years? No; but they have supplied them with many of a different kind; those that are expressly adapted to their age, both in manner and matter; with subjects that excite their vivid interest; and as one succeeds another, each new one is a fresh stimulus to curiosity and is eagerly grasped and mastered. And when educators have learned to sit at nature's feet, and make mental curiosity a genial spur to the reading lesson, by supplying fresh, attractive material at frequent intervals, then the reading lessons of the schools will become an elastic power instead of a spiritless formality. Then the work will be accomplished in a few months than now is accomplished

We have had in use in some of our Primary Schools, to a limited extent, the kind of reading material most useful for schools, in the shape of the "Nursery," that charmingly edited and illustrated child's magazine. It has been procured through the voluntary subscriptions of the children, and has therefore cost the teachers some painstaking. But the interest and life that have characterized the exercises in this attractive periodical, coming fresh as it does every month, over the dull pages of the well-thumbed and familiar text-books, have more than compensated them for their trouble, and the subscription list has been increasing year by year.

The school committee of the city of Cleveland, Ohio, earnest to accomplish the most that is possible for their schools, take several hundred copies of the "Nursery," and a still greater number of the "Little Corporal," an excellent magazine for somewhat older scholars; and I fondly hope that one of the first uses of a portion of the income from the Howland bequest, soon to be realized, will be to inaugurate

considering the early age at which they graduate. Very few attend school after reaching the age of fifteen.

Our committee were disappointed and exceedingly sorry that the town voted to go back to the old district system, at the special meeting called for that purpose in May. We felt that it was attempting to rock the wheels of civilization—an attempt which always proves unsuccessful in the end. We certainly hoped that the town would give a fair trial of the new system. We think a careful examination of the school-houses, as they were two years ago under the old system, would alone be sufficient to prove its inefficiency. At least, it would show that the usual manner of keeping them in repair, apparently the natural result of that system, was anything but creditable. Language would fail to describe the repulsive appearance of the house in District No. 7. Several of the others needed painting and glazing. Two were without any suitable blackboards. Two or three had broken benches and chairs, and badly-backed desks. One needed shingling; several needed plastering; and all sadly needed whitewashing.

We think the town of Raynham never expended five hundred dollars to better advantage, or in any way more to its credit, than it did in repairing the school-houses and making them neat and comfortable.

School Committee.—JOHN M. MANNING, NATHAN W. SHAW, E. B. TOWNE.

REHOBOTH.

Where failures occur, it is customary to throw the responsibility on the teachers and the committee employing them; but while the importance of a good teacher as a leading element of a good school should not be overestimated, coöperation on the part of parents is equally important. A higher appreciation of the importance of this subject is what is most needed at the present time, and we must look for the dawn of reform in this direction. If parents understood their duty and acted in accordance with it, nearly every school would prove successful; for if the teacher was deficient in government, a knowledge on the part of the scholars that they would be held responsible by their parents for their behavior, would materially assist the teacher in maintaining proper discipline in the school. Children, too, would be required to be regularly and punctually in their places, and not be allowed to absent themselves for trifling causes, thus overcoming another important difficulty that constitutes one of the most serious obstacles to the success of our schools.

School-houses.—We feel it our duty to again call attention to the condition of some of the school-houses, and their entire unfitness for

ough the generous action of the town at the annual meeting in lengthening the school-year, we have been able to give our opportunities for acquiring an education, which have never before accorded to them, and in which we had heretofore been sadly far to a large majority of the towns of this Commonwealth. In respect we are still below the average for the State, which is more than eight months of Public School per year for each city and town. With eight months' schooling per year, we can secure and keep better teachers, at the same price per week, than with only six months' schooling.

School Committee.—L. E. LINCOLN, ELISHA ORVIS, JOHN CLEVELAND.

TAUNTON.

In the cities and districts of many portions of our country, libraries have been formed expressly for the use of teachers, as sources for collecting information, and as aids in their work of mental training. In the city of Taunton we have an excellent and well-selected public library. I recommend that you adopt measures or exert your influence to secure a teachers' department in this library, which shall contain works and books pertaining especially to the profession of teaching. This effectual avenue will thereby be opened for a high elevation of the standard of public instruction. This, in its largest and most narrow sense, is a measure for the public benefit. Our teachers are necessarily so migratory, and are so inadequately compensated, that each has not sufficient inducement to incur the expense of procuring a professional library; but at a comparatively small outlay, a large number of educational works can be obtained for the city public library, and may be accessible alike to the several teachers, and to all interested in the education of children and youth. At my suggestion, a large number of books of this kind were some time since placed on the shelves of the library, and the "American Educational Monthly" is sent gratuitously to the reading-room.

The impression is too prevalent that the candidate for the teacher's position, who has not the requisite attainments for a position in the Grammar School department, can be tried in the Primary School. This impression is decidedly wrong. The person who has not the attainments sufficient for a Grammar School, is not qualified to occupy the teacher's desk of a school of any grade; and certainly no position demands peculiar tact or special fitness more than that of a primary teacher. Our Primary Schools are really the foundation of the educational structure. In them is commenced the formation of the habits which, gaining strength during the various stages of

mental, moral and physical growth, influence thought and action during the whole subsequent course of school training. The formation of habit must be specially guarded in childhood, instruction and influences should be correct. The first bending of the twig should be in the direction in which the tree is to be inclined; its maturing growth may not be checked by an after attempt at bending it, to change its inclination. No error is more prevalent than that of an incautious standard for the Primary teacher. A person of ordinary experience and observation is aware that the correction of habits already established, is much more difficult than that of instituting new ones. Again, childhood is the period of greatest confidence in precept and example. Hence the saying, "First impressions are the most lasting." If these are well and carefully directed, the pupil is fitly prepared for successful progress under the care of the true and skilful educator, in the more advanced stages of his instruction; to the extent they are wrongly directed, early tuition is a detriment to future advancement in character and careful mental culture. Hence, viewing this matter merely in the light of financial policy, we must regard the time of the pupil as more than lost, and the educational funds of the city worse than squandered to the extent that erroneous instruction is practised in the elementary school.

But this is not all. The habits thus early formed, not only affect the entire course of school training, but also will characterize the person of mature years. Habits give direction, not only to thought and action, but to the mode of thinking and acting—not only the course of mental development, but constitute an important factor of the individual.

In addition to the peculiarities of his special department of instruction, it is the province of the teacher of a Primary as well as of a higher grade of school, to inculcate distinct enunciation and correct pronunciation of words, good expression in language, and to direct the "young idea" into useful habits of accurate observation, conception and practice.

The elementary teacher, more than any other, must draw upon his resources to awaken and keep alive an interest in the minds of pupils who are yet incapable of prolonged study from the text-book. Those who have not acquired the power of independent, patient investigation has been well said, "It requires the greatest wisdom to teach the fondest ignorance."

None should be placed in charge of the pupils of our Primary and Intermediate Schools, but such as have made special preparation in the methods of imparting elementary instruction and in the management of children, either in a Training School for the purpose

successful experience; and those already in your employment should make this department of the teacher's work their peculiar study, and endeavor to exhibit the certain fruits of extended, thorough reading, careful observation and valuable experience, by the adoption of the improved processes in their school-room practice.

Of the studies pursued in the Grammar Schools, and of the manner of pursuing them, as influenced by the prescribed plan of study, I cannot at this time fully express my views. These schools hold an especially important position in your educational system, because the greater number here finish their school education, and assume the duties of life, without any further school advantages. At my suggestion, during the current year, you have introduced into the plan of instruction, oral and illustrative exercises in the simple forms of book-keeping. It is my impression that a portion of the time given to the merely memorizing details,—as, for instance, the almost endless details of geography,—can be more profitably employed in some attention throughout the course to compositions, letter-writing, formation of sentences and declamations, thereby acquiring the ability to arrange thoughts correctly in good English, and the confidence to give them able expression.

One great excellence of our system is the uniform standard of attainment definitely indicated in our plan of study for all the corresponding grades and classes throughout the city. In this respect we are far in advance of some cities of more mature age and larger wealth. If this plan of study can be so modified that its progressive steps may be indicated by topics or subjects, instead of the number of pages in particular books, the tendency will be to influence the teachers to endeavor to make the scholars complete masters of the subjects, instead of masters merely of what the particular text-books teach—give broad, general instruction, in connection with the principles and minutiae of the books, that shall lead the pupils to a clear comprehension of the whole subject taught, with power to express what they learn in manner and form independent of any particular book, rather than to confine the attention solely to the details and *memoriter* of the particular form of the text-books in use. Our instructors would expect examinations to be not necessarily in the precise language of the books used by the class, but in the subjects of those books, and would be inclined to govern themselves accordingly in their class exercises and instruction.

Great advantage can be gained by granting Grammar-School diplomas to such scholars as in the opinion of the committee have properly completed the prescribed course of study, and whose deportment has been satisfactory. A powerful incentive can thus be offered to the

pupils of this grade to strive to attain good scholarship, and severe to the end." With our uniform standard of qualification can be easily accomplished; and combined with compact methods of instruction, together with carefully arranged annual examinations, can be rendered highly beneficial as an additional stimulus to better exertion on the part of both teachers and pupils, thereby better preparing a larger number both for the practical demands of life and for the more extended culture presented by the advantages of our excellent High School.

Evening Schools.—The Evening Schools were in session six months, or until the evenings became too short and the schools too small to justify their continuance. The whole number of pupils belonging was 403; the average attendance was 236½. Among the pupils there were some marked instances of a high order of natural endowments, active intellects, and rapid progress in scholarship; but there were many of equally marked obtuseness. The quality of instruction was generally good, the order was nearly equal to that of the regulated day schools, and the pupils who remained during the year were in the main studious. Most of those who entered for the purpose of mere pastime, absented themselves as soon as they found that earnest instruction and attentive study were required. The charge of these schools was to me a source of pleasurable interest, and in regard to them of great utility, in being the only available means of granting a partial supply to the pressing educational want of a large portion of our youth, whose necessity for toil to earn their bread prevents their attendance on the day schools, except during a limited part of the year.

It must not be considered that the Evening Schools can be substituted for the minimum amount of tuition required by law. (Statutes, chap. 42, sect. 1.)

In order to carry into practice the spirit of the statute, the law must be gained. First, you must make suitable provision for the proper schooling of such as can attend only three months of a larger portion, but not the whole of each school-year; secondly, the owners, agents or superintendents of manufactories must employ between the prescribed ages, who have not attended school, a number of pupils as required by the law.

Admirable as is our graded system, it is based on the supposition of regular and continual membership, and is not calculated for the attendance of the child-operative portion of our community. For example: a scholar attended the Intermediate or Grammar School during a part of last year, and worked in the factory the remainder of the time; he returns to school this year, and cannot

of which he was a member, because he is not prepared for the promotion; he cannot go on with his studies where he left, because there is no class now in that particular stage of study, the classification of the school must not be disturbed to accommodate the individual; he must fall back, join the next class, which is just where his class was when he entered the school one year ago. Unfrequent have been the instances of aggrieved parents coming to me that their children could not progress satisfactorily in school, because they must repeat the three or more months' course of the previous year.

Children of this class usually complete the Primary, and most, if not all, the Intermediate course of study, before they begin their work in the manufacturing establishments; but, for reasons intimated, they seldom accomplish much in the Grammar Schools. For their sub-sequent accommodation, one ungraded day school, at least, should be established, in which classes of various grades can be formed to suit the circumstances of the scholars, just as is done in many country schools, and as was usually done in the schools of olden time. Those children coming from schools without the city, with attainments not in harmony with any class in our Graded Schools, could have the advantages of this school until they became prepared for some graded school.

Pupils who, from incapacity, dulness or irregular attendance, cannot accomplish the work of their classes, instead of falling back one year, can be readily accommodated in such a school.

Would the wisdom of your board deem it expedient to establish such a school as the one I have indicated, the second point can be usually gained if the "owners, agents or superintendents of manufacturing establishments" will agree to employ no children within the prescribed ages but such as obtain certificates from the superintendent of the Public Schools, that they have completed the term of three months' study in accordance with the provisions of the law. Those superintendents of mills, whom I have consulted, cordially approve this plan, and I am confident their coöperation would be heartily extended.

Drawing.—There has been an increasing interest in the study and practice of drawing in the schools. It has become a regular, though elective study in the Grammar Schools. It has been introduced and encouraged, and has received considerable attention in the Primary and Intermediate grades, and in the ungraded schools. Its utility is unquestionable. I am pleased to be able to say that the machinery is already prepared for the successful operation of the new law of the State, which requires that drawing be among the regular studies of the Public Schools.

Superintendent of Public Schools.—W. W. WATERMAN.

k, yet if asked for their reason for thinking the schools are not
al to those they attended, they will answer, "I know they are
"; and this is all.

School Committee.—CHARLES F. SHEKMAN, JOHN W. GIFFORD, LUTHER D. KIDDER.

ESSEX COUNTY.

AMESBURY.

Primary Instruction.—From the foregoing remarks, it will be per-
ed that many of our teachers are employed, either wholly or to a
ter extent than formerly, in Primary instruction. In architeo-
e, it is important to the stability of the superstructure, that the
adation be well laid. When it was in contemplation to build a
nument on the spot where occurred the battle of Bunker Hill, the
asion of Gen. Lafayette's visit to this country, in the year 1825,
taken advantage of to give additional interest to the imposing
emonies that took place on the day of the anniversary of the battle
hat year. But the corner-stone that Lafayette then, with his own
da, assisted in laying, is not the "corner-stone" of the massive
umn that now marks the spot. It was necessary to dig deeper, and
a broader and solid foundation, that it might support, with securi-
the immense weight of the structure. Hence, in our educational
em, the importance of the instruction in the Primary Schools.
hem is laid the foundation that is to serve as a basis of all subse-
nt acquirements in the student's school life.

School Committee.—GEO. W. NICHOLS, JAMES H. DAVIS, JOSEPH MERRILL.

ANDOVER.

We have noticed that every year's experience in teaching adds to
value of the teacher. The teacher becomes better acquainted
n the scholars and with the citizens, and has more time to perfect
or her method and system in the art of teaching. We are confi-
t that school is, in every desirable excellence, the best, which has
tinued the longest under the jurisdiction of the same energetic
progressive teacher.

School Committee.—H. S. GREENE, GEORGE FOSTER, E. FRANCIS HOLT.

hereafter to become the supporters or the sappers of the State. The boy or the girl stays out (either with or without the permission of the parents) a day or two, perhaps several days, and it may be several weeks. When he returns, he sees an immense amount of hard work between him and a respectable standing among his classmates. What shall he do? He is unwilling to descend to the class below, and, in fact, if he is only four or five weeks behind his own class, it is mainly asking too much to request him to enter a class almost a year behind him. Well, one of a brave spirit will set himself manfully to work, and in a short time will hold his accustomed rank in his class. But these are not more than one in ten; the nine will be discouraged, become uninterested in their own studies, in the teacher, and in the school, cease to work, and bring disaffection and disorder where before was harmony. These absentees may be divided into two classes. First, those who are absent by permission of parents or guardian. What is needed as a remedy for the evil, in cases of this class, is a healthy and strong public sentiment, which shall hold to the principle that the State may justly frame and execute any law which is essential to its own existence, even though it may infringe on individual liberty. No argument is necessary to support this statement. The principle is recognized in hundreds of laws. A man may be so erroneous as to take the extreme definition of liberty or freedom, and say, "this is a free country; I may do anything, whatsoever I desire." We very quickly show him that he cannot murder with impunity; that he cannot commit trespass on his neighbors; that he cannot run through the streets for half an hour shouting at the top of his voice "fire!" when there is no fire. You show him that these are liberties which are not allowed him even in a free republic. By a vote of the people, the State may take the money of individuals and use it for the public good, and no individual can hinder.

The justice of these principles no one questions. And the point I would make is just here:—

If we may put our hands into the pockets of the property-holders, so, as a rule, are not the parents and therefore not directly benefited), and take out money freely for the education of our children, we may demand of us that the money accomplish this object. We demand of the tax-payers, in order to justify our doings, a republican government cannot live unless there be intelligence among the people. Unless the masses are educated, there can be no security to life and property. You tax-payers may have no children, and therefore receive no direct benefit from the money we demand of you for the support of schools, yet your advantage comes in the maintenance of

good government, in the increased security to life and property education brings.

They may justly answer us and say, "See to it that we have these advantages; see to it your children are educated so that the security to life and property may exist." Or again: if we demand of the tax-payers of Beverly money enough to support the schools forty weeks in a year, they may with the same justice demand of us that we send our children to school forty weeks in the year; and if a law which compels the one is not arbitrary or unjust, then a law which should compel the other would not be arbitrary or unjust.

I have wondered that the property-holders, the men who pay the heavy taxes, don't come forward in their strength and demand the money which they are compelled to surrender for the education of the people accomplish that result. Let me put it in another way. Inasmuch as there is everywhere in Massachusetts, in New England, yes, in nearly the whole American nation, a public sentiment which recognizes the unquestionable justice of the law that allows us to take the property of men, willing or unwilling, for the support of schools, I have wondered that these men do not exert themselves to create and strengthen a public sentiment in favor of a law which shall compel men, willing or unwilling, to send our children to school.

Superintendent of Public Schools.—L. F. DUFFIE.

BRADFORD.

It is now five years since the High School was established here, and during this time it has been in successful operation for ten months each year. And it seems to us that this town may cherish a just feeling of pride in the possession of such a school, especially as its establishment and support have been voluntary on the part of the town, that is to say, the town does not contain the necessary number of families (500) whereby it would be compelled by law to maintain a High School. And may it not be a source of congratulation to us that we have so fine a location, so pleasant grounds and so commodious a building for the use of this school? And to this we may add its present high standing and character. During the last year the same teachers have been continued, who are devoted to their duties. Their management has been quiet and judicious, and everything has been done with regularity and system, and well done. The success felt in this school was clearly shown by the presence of more than two hundred and fifty parents and friends at the last examination.

To promote good order, things should be done in order. There should be a time when school begins and ends, so there should

in the session of each school devoted to the different branches
 issued. Reading should have its place, arithmetic its place, and so

So all the branches should as a general rule claim and receive
 the attention of the scholar each day through the term, and at a par-
 ticular or uniform time each day. Further, that study which seems
 to challenge the hardest thinking should have that place in the day
 when the brain of the scholar is in the best working condition. Thus
 arithmetic, which requires clear thinking to solve its intricacies,
 should have a place in the early part of the day, while the easier
 branches, like reading, spelling and writing, should have attention
 during the last hours of school.

School Committee.—H. E. CHADWICK, S. W. CARLETON, C. B. EMERSON.

GLOUCESTER.

While I take great pleasure in recording my belief that the town
 has an able and faithful corps of teachers, I must also express a wish
 for this place, the last in which I shall have occasion to allude to them
 as a collective body, that they would give more attention to self-cul-
 ture, particularly in those branches of knowledge which would tend to
 increase their usefulness in their vocation. A few, it is true, feel this
 to be a duty, and are zealous in the work of self-improvement; but all
 do not like to read and study, that they may emancipate themselves from
 every to the text-book, even if it is the best; and to encourage all
 on such a course, the few who pursue it would render a good service
 in organizing an association of the teachers of the town for mutual
 improvement in everything relating to the work of the school-room.
 I might enlarge much on this subject, but it is not necessary; the
 benefits that would result from such an association of earnest teachers
 are too obvious to be pointed out in detail here.

I have seen a few beautiful maps of the continents on the black-
 boards, but they were drawn by select pupils from copies, and must
 have required the expenditure of much time to produce them. It is
 not by what a few with great labor and a copy before them can do
 at all, but by what all with rapidity and from memory can do to show
 the form and features of a continent or a country, as these are stamped
 on their minds, that we are to judge of the real value of the in-
 struction they have received in this study; and the first requisite
 towards the attainment of the best results in this direction is, that the
 teacher herself should be able to go to the board and quickly produce
 from the ends of her fingers a correct picture of any part of the earth
 she wishes her pupils to delineate. And when I consider the great
 advantage which the ability to do this gives to a teacher of geogra-

BOARD OF EDUCATION.

order that every one does not strive to obtain it, that she should present this work before her class, without fear of criticism from her pupils or any other spectators.

Superintendent of Public Schools.—JOHN J. BARBON.

HAVERHILL.

Education in the community occupies a more honorable or useful position than that assigned to the instructors of our children and youth, and it renders it of the utmost consequence that they be well educated and competent to fill this position. In the judgment of the Board, one of the most essential and highest qualifications for a teacher is found in reverence for God, and a deep and sincere interest in the welfare of man and the best interests of society. The teacher must be in a healthy state. A mere hireling cannot be entrusted with a responsible place in our political and social system. The duties are too vast to be intrusted to irresponsible hands. The young must be reckoned among the most potent influences in the community continually shaping and building the character of the nation. Much is said, and justly, of the tremendous influence of the public schools upon our political institutions and the character of public affairs. But in the nature of things, the influence of these schools must keep the currents of their influence strong and vigorous, or they will become infected or sluggish, and do much mischief. Our teachers must have character and public spirit, a breadth of view, must comprehend and appreciate their responsibilities to the Commonwealth, as well as their peculiar responsibilities to the young.

Studies.—To the introduction of new studies and new methods the Committee are strongly disinclined and slow to move. On the subject of changes, in this respect, have been made during the year. The use of drawing cards to be used with the slate, and a set of books to be used with the pencil, have been introduced for the lower, and the latter for the higher schools. The Board has instructed and practice in these exercises, alternating with writing, will initiate our children in the art of drawing and give them a taste therefor, and also greatly improve their chirography. The progress of many of our pupils, seems sadly imperfect. The Committee are confident that these lessons in drawing will prove a very decided benefit to our schools, if the design and plan concerning them are faithfully and enthusiastically carried out.

Committee.—GEO. W. BOSWORTH, J. V. SMILEY, B. A. SAWYER.

LAWRENCE.

Drawing.—The attention now given to the natural sciences and to mechanic arts, and the custom of representing to the eye, by at least a rude outline, such objects as we wish to describe to others, or to get a clear idea of ourselves, render the training of the eye and hand in the production of plain figures and simple outlines, almost necessary to a good Common-School education, as is the learning to read and write.

The committee, believing this branch of study too important to be longer neglected, after careful investigation and experiment, have introduced Bartholomew's System of Drawing into all the schools of the city. The slates and cards are used in the Primary and Middle schools, and the drawing book in the other schools. Two lessons a week, of from one-half to three-quarters of an hour each, have been given in most of the schools for the last four months, and the result has been like gratifying to the committee and to the schools. With a little effort on the part of the teacher to keep up the interest in this subject, which has been so easily excited, the pupils will be greatly benefited at a small expense of time and material, and those may be said to be benefited who least expect it.

Evening Schools.—The largest number present on any one evening has been 534; the smallest number 148; the average attendance for the last year and a half months being 306. The success has been more than equal to our expectations in everything except the irregularity of the attendance. The progress of most of the pupils that have been usually present, has been very good; the order in the school-rooms has been exceptionable. Nothing but constant and regular attendance is required to make these schools one of the greatest sources of pride in the whole school system, at the present time. To secure this will require an earnest and combined effort on the part of both teachers and scholars.

Training School.—The Training School has been in operation nearly a year and a half, and has fully established itself in the estimation of the public. Its influence is felt in all of the schools of the city. Teaching is considered a somewhat more honorable and more desirable employment. It is becoming more and more apparent to the public that something besides physical force and a resolute will is necessary to the well ordering of a school. The sub-teachers learn here of their own deficiencies, and have an opportunity to make up for them as well as they can. They are greatly benefited by the experience gained under the immediate direction of those who have met and

overcome all the difficulties which ordinarily surround the position, and when they leave the Training School to take charge of other schools, they have learned not to lay down too many rules, but to calmly consider new difficulties as they arise, and to find the way out of them. They have learned much in the art of governing themselves, and in that of governing others; they are also much benefited by the advice and encouragement of those who were teachers in the Training School, which is freely asked and always given.

Nine young ladies have completed the course prescribed in the school, and are now teaching in the other schools of the city.

Superintendent of Schools.—G. E. HOOD.

LYNN.

Evening Schools.—Encouraged by the success attending our evening schools one year since, your committee resolved to furnish our pupils with superior privileges the present year to that class of our population whose avocations forbid their availing themselves of the benefits of our day schools.

On the seventh of November, a school was established in each of the four large wards. As a general rule, a teacher was assigned to every twelve pupils. This rule has been modified to meet the circumstances of the schools. Where classification has been possible, a larger number has constituted a class, and in several instances, where which several of the pupils need constant attention, smaller numbers have monopolized the teacher's care.

Thus far the progress of the schools exceeds the most sanguine expectations of the committee. The class of persons who in former years assembled for amusement or from motives of curiosity, this year either forbore to enter or have learned to appreciate the value of the privileges offered them. The committee are gratified to learn that some who have in former years attended the Grammar Schools have entered the present classes for the review of their studies.

The number of those who received instruction in these schools last year was three hundred and thirty; during the present year seven hundred and thirty-six.

Drawing.—That drawing is an art of which the elements are in the minds of children, is proved by their common practice of making pictures. By some teachers it is made preliminary to writing, but all it is acknowledged to be an important aid in training the eye and the hand, and enabling the pupils to acquire skill in both branches.

same time usually prescribed for but one branch. Its importance in study in our schools may be estimated by considering its relation to the artistic, mechanical and scientific employments, in many of which it is indispensable; and most persons, in whatever condition in life, have frequent occasion for its exercise.

Influenced by these considerations, the committee, late in the year, decided to introduce the system of Prof. Louis Bail. It consists of twenty wall charts, accompanied by a key for the use of teachers.

Chairman.—JACOB BATCHELDER.

MANCHESTER.

If the prime object is, not to memorize the rules and definitions, but to enable the pupil to form clear ideas of a subject and to express them readily and understandingly and in a proper manner, it follows that the study of language is of the very highest importance, and should hardly begin too soon. It should be begun with the first lessons in school, and receive attention during his whole school course. It is a mistake to suppose that success in life depends on mathematical ability chiefly, or to any considerable degree. Ten young men fail to succeed in business or in obtaining situations, for lack of ability to express themselves readily and correctly in speaking or writing, where they fail for want of mathematical skill.

In an article in the "Atlantic Monthly," 1869, entitled "Consumption in America," written by one of Boston's most celebrated physicians, the question is asked, "Is our system of education a promoter of consumption?" He says: "We believe the affirmative of this question to be true. Having the strongest love and respect for our system of education, we nevertheless assert that it is grossly imperfect in one particular. It wholly neglects the body in the desire to fill the memory and stimulate the intellect. Instead of looking to the full development of a youth, both body and mind, where does a school system make any provision for the proper manly and womanly physical development of the children? A vacation is occasionally given; but where is the proper physical training of the pupils? None. Surely nothing can be more absurd than this, but it is nevertheless true. What school committee-man thinks of a rounded, well-developed muscle, and vigorous frame of a body as the precursor of 'support and actual aid' to a noble, well-balanced intellect?" This is undoubtedly too true so far as the fact is concerned, but what is to be blamed is a very important question. We fear the responsibility is a divided one, in which the public must share; but if school committee-men neglect or repress all forms of physical exercise in

school, they should not be held blameless. We find in every community those who insist that what is chiefly wanted is a strict observance of school hours, and severe, uncompromising teachers who keep the scholars to their books, and will require perfect lessons learned from them,—who will, in a word, banish everything from the school-room except study and recitation, which is simply to make sure the scholars have learned their lessons and can give them perfectly. The model school is one in which every form is erect in its position, fixed, and all eyes fastened upon their books, and to complete the picture, “softest silence must reign paramount.”

Of course this class of persons see no sense in physical exercises and regard them as a waste of time or worse, since they cause of some noise and confusion. It is well to have fixed and rigid notions in regard to these matters, but it is important that they should be according to knowledge, and when they are opposite to those of our best educators, they should be exchanged with becoming modesty. After all, the importance of physical education is generally recognized in theory. We wish to be practical, however, and reiterate the views expressed heretofore, that physical exercises should find a place in every school, but more particularly in the lower grades. It is not merely that physical education strengthens and beautifies the human frame, and renders it a more fitting instrument for the mind cultivated and refined by education, but because we believe that one-half an hour a day spent judiciously in such exercises, will enable the pupil to accomplish more than he would without it.

School Committee.—T. W. SLADE, G. A. PRINCE.

MARBLEHEAD.

School Government.—We are glad to find that our schools are governed by love and appeals to what is right, rather than by the harsh and brutal method of fear and threatenings of judgment. A sense of the might which forever stands behind Christian love and gentleness, and wins for them the victory, is seen in the dealings of our teachers with the children of the town; and we rejoice that there are very few exceptions in any school to this beneficent influence. May the day soon come when no child in any school is found who needs the harsher discipline. But the schools must be governed, and order must be secured, even if the rod and the cane are called into requisition. But their use in the school-room is as likely to indicate the incompetency of the teacher as the de-

the pupil. It is a remedy to be administered with great caution, should be labelled "dangerous," "use with care."

Text-books.—The books in use are substantially those mentioned in last report. We have found Allen's Elementary Latin Series useful for beginners, and have added them to the list for the High School. With this exception, the books in this and our other schools are the same as last year. Text-books are valuable as aids if judiciously compiled, but can never take the place of an intelligent oral instruction from the teacher, which, more readily than all other aids, aids the pupil to think, to learn what powers of analysis he may have, and use them in the acquisition of knowledge and the formation of intelligent opinions. If the world suffers especially from any great want, it is for men and women of convictions, for men and women "who do their own thinking," and so add to the stimulating intellectual force of society. The process is begun in the school, if children are properly instructed. The value of solid intelligence in a people, the power of careful training and steady government in the education of the young, has been newly illustrated by the war now existing between Germany and France: while in Germany but a little more than three per cent. of her vast armies are substantially illiterate and ignorant, more than thirty per cent. of the military forces of France can "neither read nor write!" It required no prophet to predict the result. Other things being equal, an educated and intelligent people must inevitably become the conquerors and leaders.

Stitching as a School Exercise.—The experiment of introducing stitching was tried in both our female Grammar Schools, and at the High School during the last term of the last year, and we are glad to say, with much success. One lady gave gratuitous instruction in stitching at one of the Grammar Schools and another at the Farm School. Both were thoroughly skilled in all branches of plain and ornamental work, and their generous service was highly appreciated by the committee and teachers. A committee of ladies examined the various specimens of stitching work in the Grammar School, and, from the great number of specimens offered for inspection, selected one from each class in each school, to which were given the prizes awarded by our generous and patriotic citizen, James J. H. Gregory, Esq. One afternoon in each week was devoted to this purpose. We trust that these ladies will find it possible to continue their valuable instruction in future; and we think the practical use, to any young woman, of skill in this neglected art, will amply compensate for a little less of grammar, arithmetic or history.

School Committee.—W. B. BROWN, EDWARD A. LAWRENCE, THOMAS FOSS, S. HATHAWAY, JR., N. P. SANBORN, STEPHEN HATHAWAY, BENJAMIN P. WARE, JAMES HELLER, WILLIAM GILLEY, JR.

NAHANT.

Prominent among the difficulties which impair the usefulness of teachers and are so injurious to the schools, is a want of co-operation of the parents with the teachers. The province of both being to develop the young and tender mind in the development of those moral and intellectual qualities which will in after-life make their possessors respected, their sympathies ought to be in perfect harmony. If teachers cannot do all that is to be done. Unless the parents co-operate with them and aid them by their influence and example, their efforts must result in little more than failure. It is hard, very hard to make headway against that strongest of all incentives to good or evil, the influence of home.

Another evil growing out of wrong training at home is the irregular attendance of scholars at school. This is a source of serious annoyance to the teachers, besides being highly detrimental to the interests of the schools. They who are often absent or tardy not only make but little progress themselves, but act as drawbacks to the rest of their schoolmates. A whole class is retarded by connection with one backward or dull scholar. Parents have a great responsibility in this matter. The right improvement of educational privileges is a sacred trust committed to their keeping. It depends upon the manner in which that trust is kept by them, depends upon the future welfare of their children. The fact that a child's absence from school, even for a single day, will to some extent affect its progress should make them feel that they cannot be too self-sacrificing. They should be habitually thoughtful of effects in the future,—of effects in the formation of habits of regularity and attention to duty, in their children.

School Committee.—E. B. JOHNSON, J. T. WILSON, F. E. JOHNSON.

NEWBURYPORT.

Teachers who develop a particular fondness and adaptability in teaching young children should never be "promoted," in the common acceptance of that term—that is, transferred to a higher grade of schools; but they should be promoted to a higher salary and remain in our Primary Schools. Experience has shown that our best schools are those which have been longest under the care of the same teacher.

Almost every school report published in this city, and in the State as well, has recognized the great importance of the Primary branch of our school system and advocated measures intended to insure greater efficiency in that branch of our school system. We acknowledge this to be

of the whole superstructure; and as wise builders we must have the foundation perfect, or the building will be weak and unsafe, and unable to supply the wants for which it was designed.

We do not deny the wisdom of that policy which would give to our own citizens the preference in the selection of teachers; on the contrary, we admit it, provided they are as well qualified as any we can procure elsewhere; but, admitting this, we feel that we have accepted another responsibility, which is, the providing of more excellent facilities for fitting and preparing them for the specific work we would set them to do. No person ought ever to have the care of a school, or the exclusive control of a room as assistant, who has not previously gone through with a practical course of instruction in the theory and art of teaching, under a wise and experienced teacher.

We believe, then, it would be well for the school committee of this city to act with reference to this idea. Some plan might be devised and grafted upon our system, the ultimate aim of which should be to improve and elevate, first our Primary Schools, and through them the schools of higher grade throughout the city.

Training Schools.—The following is the report of the teacher:—The school term was from October to April, and in the course of it 100 names were enrolled, but as 43 of these were only for a short time on the list, perhaps we might call the true number of pupils 108. Of these, 25 were colored. In forty-seven sessions the average attendance was 72. Eighty we considered a full school. The average age of the white girls was 14 $\frac{3}{4}$ ths years, of the colored girls 20 $\frac{1}{2}$.

There were fourteen classes, three of them in the primer, one in book-keeping, the others divided their time with reading, writing and arithmetic, using Sargent's First, Second and Third Readers and Greenleaf's Arithmetic."

Drawing.—The committee will introduce drawing into our schools as soon as they can make the necessary arrangements, according to the requirement of the law passed by the last legislature.

The law found us wholly unprepared to carry out its provisions. None of our teachers had been appointed with any reference to that subject, and very few of them had any knowledge of it. A short course of lessons was given them upon the first principles of drawing, in the summer, by Miss Loring of Boston, but not enough to enable them for teaching it with any degree of efficiency. It may be necessary to employ a teacher to give a course of evening lessons to all teachers, and those who wish to teach some time this com-

ing winter. Hereafter, all who are to be employed as teachers in our schools will be expected to have some knowledge of drawing.

We are working our present system, we believe, up to the limit of its capacity. We are getting about all out of it that it is capable of affording us, and yet the results are far from being satisfactory. We have teachers in our schools to-day, who are well qualified for the vocation they have chosen. They do not know the best method of awakening and developing all the faculties of the young mind, of arousing and interesting it in the pursuit of knowledge, and yet they are faithful and zealous in the performance of their duties, as far as they can understand them; they strive to please, and yet they fail of gaining the best results, because they have never been taught to teach.

Teaching is a science, as well as law or medicine; and cases arise arising where a teacher is required to exercise as nice personal and wise discrimination of judgment, as would be required in any of the other sciences, in order that she may arrive at a correct and prompt decision with reference to them, and so maintain and promote good government in the school and equal justice to all the scholars.

Training School.—The practical question then is, How can we best accomplish our object? We believe much might be done at a trifling expense by organizing a "Training School" for the education of those graduates of our High Schools who wish to engage in the occupation of teaching in our city. Such a school would have many advantages over the Normal Schools. In such a school as we propose to have, an experienced teacher should be employed, who should instruct them in the practice of teaching. Some plan of this kind has been adopted in connection with one of our Primary Schools, and with good result.

Such schools have been established in several cities and towns in the State, and the benefits resulting from them are fully equal to the expectation of their founders.

We deem it important that some plan like the above be tried in this city; and we believe that, if our citizens would support the committee in any efforts they might decide to make, there would be no serious impediments to our success.

Superintendent.—There is another thing that seems indispensable to the further improvement of our school system, and that is the establishment of the office of superintendent of schools. This question has received the favorable consideration of two successive boards of education. Last year the question was brought before the city authorities, but failed to receive their favorable support. But we hope that it will not be so distant when we shall be authorized to appoint some

to take the general supervision of our schools, who can give whole undivided attention to the work,—one who has a just and clear idea of the ends to be attained in our schools, and is familiar with the duties of the school-room and the necessary qualifications of the teacher. Much has been said by our citizens and some action had in reference to plans for the improvement of the city in various ways so as to afford increased facilities for business, and that men of enterprise with capital might be induced to invest here and become partners with us. All these motives are highly commendable, and we hope in the end may prove successful. But for the attainment of the object, even, we think our school department has not had that consideration which its importance demands. Men who are looking for a place to locate and engage in business, whether as manufacturers, mechanics or laborers—if they are of that class which it is most desirable to draw to us—would certainly inquire about our educational facilities; they would be interested to know all about our school system; for people of intelligence know that a community is prosperous and flourishing about in proportion to the thoroughness and perfection of its facilities for education. We must, then, if we wish to be known as a progressive, enterprising community, keep shoulder to shoulder with the march of improvement, in this department, with other cities and towns in the Commonwealth. We believe that every city in the State but Newburyport, with possibly one exception, has a superintendent of schools. A just local pride, and the importance of keeping abreast with the progress of ideas and gaining the reputation of being first or at least not to none in this respect, seem to demand that something of the kind should be attempted here. Some of the necessities of this office are set forth in the report of last year, to which we would refer the reader. We do not claim that this would make our system absolutely perfect. Perfection is not to be reached by any act of ours in this generation, but we do believe that the measure which we propose is an important step in the right direction towards perfectibility.

School Committee.—DANIEL P. PIKE, *Chairman*; ISAAC P. NOYES, *Secretary*; WILLIAM C. BELL, *Agent*; MOSES PETTINGELL, JR., RICHARD PLUMER, THOMAS C. GOODWIN, W. W. SNOW, WILLIAM H. NOYES, SAMUEL J. SPAULDING, N. A. MOULTON, WILLIAM H. HUSE, JOHN A. HOXIE.

PEABODY.

to theorize as we may, in regard to the amount of education and culture to which every child in the community is justly entitled, the fact is before us, that, of all the pupils who enter the lowest classes in the Grammar Schools, not more than one-third will remain to graduate

at the end of the regular Grammar School course, and that one-half will leave before they reach the second class. It is a question of the greatest importance, What shall be done for these scholars? It is of little avail that we remind them of the duty to remain longer in school, and quietly wait for a public provision that shall enforce it. These boys and girls are fast growing into their places as citizens, with the limited amount of education they can thus obtain. Our better course will be to so modify our methods of teaching and course of studies to the wants of these pupils, as to furnish them the best education possible, under the existing circumstances.

High School.—Lectures.—As assisting in the direction of general culture, mention should be made of a course of sonnet lectures which has been given to the school on Saturday during the fall and winter terms. These lectures have been so far as the committee feel at liberty to speak of them—by learned and able gentlemen, who have succeeded in making them exceedingly interesting as well as instructive. They have covered a wide range of topics, such as travel, history, biography, elocution, several branches of natural science and kindred themes. The scholars are required to take copious notes, and write out a full abstract of each lecture for inspection by the teachers, and for preservation for reference.

It cannot be doubted that many of the scholars will be induced to visit again these new and wide fields of knowledge, and to gain glimpses of which have been given them in these lectures. The success of such a course of lectures, originating with the teachers of the High School and carried through by their exertions with such a degree of success, has such obvious advantages in it, that it has been adopted with much satisfaction by several schools in this vicinity.

School Supervision.—The subject of school supervision has recently received the attention of those engaged in the subject of general education. The faults of the method pursued in most of the towns of the State have been noticed in public addresses, in essays, and in reports of superintending committees. Especial attention has been called to this subject by the Secretary of the Board of Education. The usual method has been to divide the school committee into sub-committees, each having one or more schools assigned to its care. If ever a school committee had a sufficient amount of time and opportunity to be fully engaged in the work required, and was able also to keep informed of the latest improvements that should be adopted, either in the studies pursued, or the proper division of studies and classification of teachers, then this method would be perhaps as good as any other.

conversant with the subject knows that this is not possible. The members of the committee have other engagements requiring more use of their time; and it is impossible, with this method of supervision, to secure that attention to the work which is done, or which may be left undone, which its importance demands. The cities, and many of the larger towns in the State, now employ a superintendent, and in other towns the committee appoint one of their own number to attend to the details of classification of schools, to give especial attention to the execution of the work as laid out by the committee, to attend to prudential affairs, and to see that no school shall fail of doing its work at the proper time, and thus to see that each school is kept up to the highest standard. Where this latter plan is adopted, all of the members of the committee will still be required to give all the time and attention to the schools which they will generally be able to give free from their other duties. With this arrangement, each sub-committee should have assigned to it a particular department, rather than particular schools.

Drawing.—The statutes of the Commonwealth now make drawing a required study. Except in the High School, no systematic attempt has been made to introduce this branch of study,—although some elementary teaching has been given by Miss Arnold in the District School. The committee have voted to introduce Bartholomew's System of Drawing, and to begin the study at the commencement of the next term.

There is, undoubtedly, a tendency to introduce too many studies, and in attempting to do too much, there is a liability of failing to do anything well. Although the statute does not leave the introduction of drawing optional with the committee, yet they are of the opinion that the provision is judicious, and that a portion of the time each week may be spent in this study to the advantage of the pupils. Both the hand and the eye will be trained, and the taste cultivated and improved. A large portion of our teachers have received instruction, and are capable of teaching the elementary part of the work required; and but little more than this will be attempted at present, until experience has shown what can be accomplished.

School Committee.—AMOS MERRILL, FITCH POOLE, A. B. HERVEY, G. F. BARNES, J. V. HANSON, GEORGE S. OSBORN.

ROCKPORT.

The fact that we have a system of education superior to that of other nations, is not a proof positive that all the children living within our influence will receive that education necessary for their future suc-

cess in the ordinary business of life. How can the marble be in all the symmetry of the human form till it is taken from the quarry and fashioned by the hand of the artist? And how can a child be intelligent, happy or useful without the culture and discipline of education? The transforming influence of education is nowhere more than in our Public Schools. It is obvious to every parent and guardian that their children can be benefited by our schools in proportion to the time they are under their direct influence. A child who never enters the school-room is wholly deprived of the culture and discipline which may be derived from our system of education; so also the child who is allowed to be absent from school a great part of the time during each term, rises but a very little on the scale of moral and intellectual improvement. Our school system may be perfect in theory, our school-houses in every respect pleasant and commodious, the best of teachers employed, and all the facilities for the acquirement of a good education provided, yet we fear too many children, even in our midst, will grow up as men and women devoid of that culture and discipline so necessary to their future welfare, simply because their parents are too indulgent in allowing them to stay away from school as often as they wish, and their parents are too indifferent in regard to the amount of education their children acquire.

School Committee.—N. F. S. YORK, CALVIN W. POOL, FRANK H. KNOWLTON.

SALEM.

Report of the Naumkeag School.—In making the second annual report of this special school for factory children, we are glad to record that the performance of the second year has fully justified the promise of the first. The same untiring zeal of teacher and the growing interest of the taught which marked the early days of the school have continued through the year with increasing force, and the pupils' experience has developed their resources and established a more intelligent understanding of their relations. The discipline of the school is of the well ordered family: firm and effectual, without resort to force or the sentiment of fear, apparently, save of loss of the affection of a loved and respected teacher. The course of instruction is necessarily differing from that pursued in the regular day school, but is proved especially adapted to the peculiar character of the scholars, and is evidently attractive and interesting to them, and, what is especially important and gratifying, the school has become a special favor to the parents and friends of the scholars; this is probably the greatest measure of the parochial missionary labors of the school.

ing these people. Frequent applications are made for the admission of children who are not operatives in the mill, and in repeated instances children have left employment in the mill and come to the school daily at both forenoon and afternoon sessions. While the desks are not all filled by pupils who are employed in the mill, the temptation is strong to allow the vacant ones to be occupied by these irregulars, and thus to improve, in many instances, the only means of school instruction which they are probably willing to avail themselves of, and the teacher cannot be expected to look with great severity upon a violation of rule, which at once is a personal compliment, and affords to her the much desired opportunity of seeing the results of her labors in the improvement and development of individual pupils, and thus having something visible and appreciable to show for her work,—a thing which can scarcely happen with the constantly changing material of which the school is ordinarily composed.

It is also true that the school work is better and more easily done when there are few or no empty desks; there is then a better spirit of enthusiasm, and greater success. It has been the endeavor under these circumstances to discriminate between those who seem proper subjects for the regular schools and such as from their age and disability of attainments, or other cause, seem likely to become a drag upon the regular classes of the Graded Schools; and those who seemed properly to belong to other schools have been at once dismissed from the mill and sent where they belong. It is to be feared, however, that in many instances this has resulted in setting them adrift upon the streets without regular attendance upon any school. Notwithstanding this elimination, there remain at present twenty-three scholars in the school who are attending both sessions daily. Of these a few are engaged in the mill, but by extra diligence in completing their allotted work, these are enabled to come out in season to attend the school during the last hour and a half or two hours of the session, thus gaining so much time from their working hours to devote to the school in addition to the other half-daily sessions to which they are entitled in common with the rest. The others have been allowed to remain temporarily filling desks which would otherwise be vacant, apparently while these cases were few in number and in no wise affected the working of the school according to the original plan, it seemed to be in all respects a good thing, but the evident tendency was to relax discipline on the part of the officers of the mill, and in a measure to relieve them from a responsibility to see that the numbers of the school were kept up, and its desks filled by those for whom it was specially established. Whether this has been so we have no means of knowing with certainty; there has not been latterly the same

promptness in filling the places of those who have left school at the expiration of their time, and we feel sure there are some children at work in the mill since the establishment of the school who have not taken their turn at the school, though of the present of one instance of a boy now attending both sessions daily, of good character according to his own statement. We are powerless in the matter, and have not even the poor satisfaction of being able to convince ourselves with certainty of the truth, except so far as the present will fit to disclose it, and shall continue so, unless we may be enabled by the enactment of a proper truant ordinance.

No material progress seems to have been made towards securing the benefits of this school to children employed in other manufacturing establishments, and in some instances it seems that children have changed from their employment in the Naumkeag, to other establishments in order to avoid the small reduction in wages which attendance at school occasions, by parents whose only interest in them seems to be to gather the utmost farthing that may be got from their labor. It may be that stern necessity excuses them, and it is to be hoped that it does. We feel constrained again to refer to the suggestions made in our last report as to the need of the truant ordinance and efficient officers, not especially with reference to the children employed in manufacturing establishments, though here a judicious enforcement of the law would be of great value in extending the benefits of our school, not only necessarily by an enforcement of the law, but by the moral influence of the enactment, and the appointment and presence of officers charged with the especial oversight of the matter. As to other absentees from school, the juvenile loafers and habitual truants who can plead no honest employment as an excuse, for whom a truant ordinance is specially needed. If these youthful candidates for prison and the almshouse, could be even for a short time confined and kept under the ministrations of such a school as the Naumkeag School now is, we believe, that in many cases results like what we would follow, and they would be found voluntarily seeking the school which in their utter ignorance they now avoid. The Plum Street School is now in operation with its doors open, and a portion of the accommodations specially assigned for the use of the city, and a place of reformation for its habitual truants, and thus the only obstacle there has been to our having a truant ordinance to be applied by the courts and fully enforced, is removed. Why the authorities of the city after appropriating public moneys to assist in the maintenance of the school, should still decline to adopt the measures necessary to the full enjoyment of its benefits, seems incomprehensible.

however true that the statutes of the Commonwealth concerning currency are as much a nullity in our city as ever.

For the Committee.—GEORGE F. CHOATE.

High School Studies.—Allusion has been made to what are sometimes called practical studies. I think there is a feeling in many communities where High Schools exist, that these schools are evering, in their courses of study, the attention of their pupils from the important things of coming life. There is an intelligence and exactness possessed by citizens in different pursuits, in their daily business or profession, which naturally magnifies the importance of those studies that are most nearly connected with these several vocations, and diminishes that of others. One whose son is to be a merchant, hardly will admit the superior utility of the classical languages, and estimates more highly the modern. One whose daughter is to be the ornament of the home circle, will not praise, as practical, the abstract reasonings of trigonometry, or even its applications in surveying or navigation. It is equally true that the parent whose highest idea of style is derived from current newspaper articles, good as so many of them are for their temporary purpose, will not see the use of the distinctions made in rhetoric and grammar. Hence the difficulty of fixing upon what is practical for a great number of pupils drawn from the varied grades and pursuits of life. But there are some branches, to the advantages derived from which, most persons will assent. I wish, so far as can be done, that our High School course of work could be made in a greater degree elective; that certain specified studies of recognized utility might be required of every scholar, from which he could not be released, and that others might be taken up, if at all, when the judgment of the parent and the consent of the teacher should coincide, subject to the conditions, that when assumed they should be pursued to a considerable degree of proficiency, and that they should not be taken by a less number of individuals than would form a tolerably sized class.

Drawing.—By an Act of the legislature of last winter, the first section of the thirty-eighth chapter of the General Statutes was so altered as to make drawing, which had before been a study at the option of the committee, a required one in the Public Schools. As our own action had previously introduced this branch, its practical effect will be simply to continue it as a permanent part of Common-school study. But by a second section of said Act, it is made the duty of any city or town of more than ten thousand inhabitants, annually to make provision for giving free instruction in industrial or

mechanical drawing to persons over fifteen years of age, either day or evening schools, under the direction of the school committee.

Although not knowing, of course, what action the coming government will be likely to take in reference to fulfilling this part of the Act, I will venture to express the hope that, should a school be ordered, its privileges will not be confined to the children evidently had in view at its enactment, but that such members of the Public Schools, and particularly of the High School, as may be found to avail themselves of its privileges may be permitted to do so at a suitable age.

Truancy and Vagrancy.—It does not need the aid of statistics to prove that we have many children growing up in the streets who ought to be members of the Public Schools. They are found in many localities, with such stereotyped excuses for being found there, that it is apparent their parents neglect to insure their attendance. Some have not the power to enforce it, or that they are away without permission. All these reasons probably are real ones, added to such pretences as being off work, or detained from school for some necessary purpose, or the numerous evasions which idleness gives to learn. If we could confine these wanderers so that their example would not influence others, or if we had a practical system of control which would make their repose insecure, more or less would be gained to the schools and become permanent members, while the temptation they through their example offer to others to stay away would be greatly reduced. It is certainly to be deplored that in this city—are now living in the twenty-first year since the State empowered us to have regular officers for enforcing the attendance of children upon the schools, thereby doing for the poor and increasing among parents what they would gladly have us do, and securing to a large degree the community against petty offences,—and as yet we have not a system which many places of smaller population have adopted with manifest advantage. More particularly is this to be regretted because we have in our own limits a Reformatory School, to which in the last resort, we could consign such as need its assistance.

Superintendent of Public Schools.—J. KIRBALL.

SAUGUS.

School Government.—We notice, with pleasure, a marked tendency on the part of teachers to a more and more complete and better system of school government, evidently resulting from thoughtful consideration of what is wise, judicious and prudent; the accumulation of elements of a permanent and healthful nature, and marking the

ancy of mind as the true governing principle over mere brute force. This elevation, so to speak, of discipline, from a mere muscular effort to an intellectual science, we regard as among the most promising signs of the times. The time was when moral forces were looked upon with suspicion and almost universal distrust, as signs of weakness.

Most of us of a former generation can easily remember, as we look back through the light of other days, teachers, both male and female, who did not spoil the child by sparing the rod; heroic punishment (as symbolized by the rod and ferule), in their opinion, lay at the foundation of all useful, intellectual improvement,—its administration often verging upon cruelty, and sometimes upon scenes of actual horror. But what we wish to say is not so much in condemnation of the old as in commendation of the new and better system, and particularly to express our approbation of the conduct of those teachers who have made such heroic and successful efforts in the right direction.

Primary School Teaching.—There seems to be an idea, by no means universal but too generally prevalent, that almost any one is capable of teaching a Primary School. This we regard as a mistake, lamentable as a heedless and superficial estimate of what such a school should be, and calculated to work infinite mischief in the schools, lasting injury to the best interests of the community, and great injustice to a class of our most valuable teachers. Whether it arises from the fact that the teaching of small children, so far as the use of text-books is concerned, is in the main merely rudimental, and but little of what is called learning is directly applied, and in an educational point of view, in the popular sense of the term, if success is less showy, failure is not so marked, or that the scholars are smaller, weaker, and supposed to be less stubborn and less impatient under restraint of discipline, we are not informed; but we are frequently reminded, in one way or another, that any teacher, good, bad or indifferent, is supposed to be good enough for our Primary Schools, especially if they are cheap. Without intending to express a want of just pride in or a true sentiment of loyalty to other great institutions of learning, we say, without hesitation, that the most important educational interests of the Commonwealth are centred in our Common-School system, the great heart of which is the Primary School.

For the Committee.—AUG. B. DAVIS, *Chairman.*

SWAMPSCOTT.

There is much need of a better system of ventilation. The only means now employed is lowering or raising the windows, which is

very dangerous to those who sit near them. On the other hand, if they are not opened, the air soon becomes very bad, and is decidedly injurious to health. It is estimated that a man destroys seven cubic feet of air every minute, and in order that the functions of the lungs may be performed, fresh air to this amount must be supplied. When the air is expelled from the lungs it contains four or five per cent. of carbonic acid gas, but when it contains more than three per cent. of this gas, it is unfit to be breathed. Now if you confine forty or fifty children in a room, it must be very large, or the air must soon be vitiated and become unwholesome. But it is not only the carbonic acid gas that is injurious. The lungs are continually throwing off effete matter from the system, which mingles with the air, helping very much to deteriorate it. No one would drink impure water, or eat unclean food, yet in every crowded room we take into our lungs air loaded with filth that is being thrown off from the body; and we compel our children to sit from three hours to three hours and a half in just such an atmosphere, in order to save the expense of proper ventilation. It is which this bad air may be carried off, and pure air put in its place. Pure air is as necessary as pure water, and every school-room should be provided with means for its abundant supply. Scholars cannot learn much where the air is bad; they become sleepy and stupid, and are entirely unfit for study. Good air is as essential to scholarship as good food, and the architect who can give a thorough ventilation to the school-room is doing one of the noblest works for the cause of education.

School Committee.—WM. B. CHASE, JOHN THOMSON, JOHN H. CROSMAN.

WENHAM.

The parents' sympathy is always needed to sustain even the best teachers. Frequent visits to the school-room will encourage the teachers and show to your children that you are interested in their education. By such visits you will know from personal observation how the school progresses, and learn if the teacher is faithful and competent. Parents owe a duty to both teacher and scholars which the committee are unable to perform; and their visits not only sustain the teacher, but often destroy those absurd reports and false impressions which sometimes prevail. True, teachers of experience and tact will occasionally have good schools in the face of all opposition and discouragement; but those are exceptions; for the best teachers desire and need the sympathy and encouragement which the parents' frequent presence in the school-room will assuredly give. But few people, who have not tried it, realize the amount of labor required to sustain the reputation of a good teacher in our Com-

schools, at least under such circumstances. By examining the registers, we find no record of any voter's presence in the school-room, excepting at the closing examinations. As visitors, the fathers are in minus quantity, and comparatively few ladies' names are recorded. *Latin.*—We are aware that there is, in the minds of some in this community, an idea that any time devoted to the study of Latin, is in all cases "wasted time," or at least that it could be much better employed by taking some other study. In fact, they contend that the committee go beyond their authority when they allow it. We believe this to be a mistake. In a town like this, where we have no High School, and where to some of the scholars an academic course is unattainable, we deem it expedient to admit the classics, that those well advanced in their English studies, may have an opportunity to study Latin. People sometimes fail to realize the value of classical studies; yet at the present time it is admitted, by the best of teachers, that a thorough appreciation of the English language is more fully attained by devoting a portion of the student's time to other languages, even though but a limited amount of time be granted to them; what the scholar acquires in a few months is a source of enjoyment and power. Your committee have not been able to arrange any special plan for the introduction of Latin, only allowing the study where the pupil was fitted to take it, and the teacher able to instruct.

School Committee.—R. FRANK DODGE, LIZZIE G. KIMBALL, JOSEPH COOK.

WEST NEWBURY.

We cannot in the limited time we have to prepare this report mention all we would wish to, and therefore we give our attention to those subjects which seem most important. Perhaps there are no schools in town of more importance than the Primary; they are the first in order of time, and consequently the foundation of all that follows.

As the child enters the school-room for the first time, a new world is opened before him. He has left the freedom of home and is taught to yield obedience to the discipline of the school. As early impressions are the strongest, and as it is here the child receives his first impressions of school life, it is of the greatest importance that those impressions should be correct, and in order that they may be so the selection of teachers is of the first importance. Many persons think that it does not require much tact or talent to teach a Primary school, and look upon them as places in which to serve an apprenticeship and try their skill, forgetful of the great fact that a mistake here will work far more injury than in any other school. To teach a

Primary School as it should be taught requires a rare gift, and we congratulate the town upon its good fortune in this class of teachers.

School Committee.—Moses C. SMITH, J. Z. GORDON, D. L. ANDROS.

FRANKLIN COUNTY.

ASHFIELD.

To one of your committee, who has had but little experience in such matters, it seems that our schools are not supplied with teachers as they should be. Our teachers, many of them, lack age, experience, and general knowledge.

In some districts better teachers could and would have been secured had the funds allowed it, and the funds would have allowed it had there been fewer districts in the town. Teachers are plentiful, but experienced teachers command better pay than we have been able to give for both terms in the year. Our teachers, many of them, are taken from the District School in which they graduated, and are examined in those branches alone which they are expected to teach, and no further in these than they are expected to carry the year. They are put back into the same school to be the oracle for the children of their own age. This at once begets an arrogance on the part of the scholar, which can only be rebuked by the presence of a superior teacher, and it is a question quite often whether this superiority exists in the teacher.

It seems also, that teachers are changed from one district to another too often for the good of the schools. Children are not able to absorb everything that comes within their reach. And a good teacher must, of necessity, remain in a school long enough to learn the mental condition of each and every scholar, and then the mental condition must be prepared so as to be more certain of assimilation. We must, in this condition, judge for yourselves of the crudeness of such knowledge as is acquired from a mass of text-books. It is no more wise to build a house of which character grows, than salt, yeast and flour are bread. Book education alone, is a building of stone or brick without mortar. If the foundation falls to pieces before symmetry can be obtained, no possible approach to completion is made.

School Committee.—G. B. HALL, F. G. HOWES, J. R. FAIRBANKS.

BERNARDSTON.

has been the general policy of your committee for several years endeavor, by questions at the examination of teachers and of pupils, to induce habits of thought, and cause scholars to think and understand rather than simply to commit to memory and repeat.

A little girl was once asked if she understood her lessons at school. Her reply was that she had so much to learn that she had no time to stand. Too often this is the sad truth. Pupils are crammed with words, rules, definitions, which they do not understand, and, without the faculty of memory alone cultivated, are called educated. Who are the rulers and leaders in the business, political or religious world to-day? Not always those who were accounted the best scholars in school or college. More often those who are men of thought and action. The faculty of repeating the words of an author is not education; and that teacher who is satisfied with his efforts, and with his pupils, when thorough recitations of pages of text-books are accomplished, makes a sad mistake. There must be practical application of rules; there must be original thought and action; the child must acquire the habit of using his school-acquired knowledge as a means of acquiring more knowledge; and not look upon it as an end already obtained, or the school is comparatively a failure.

School Committee.—S. N. BROOKS, B. S. BURROWS, T. A. MERRILL, I. K. BROWN, J. THURTON, L. HALE.

DEERFIELD.

Your committee beg leave to say that, whatever satisfaction they have had in the faithful endeavors of the teachers during the year, the standard of Common-School education in this town is sufficiently high to correspond to the abilities of the scholars and to the property and position of the parents and to the opportunities the children ought to enjoy. Many boys and girls now in our schools will have no more than a Common-School education; and it may be admitted as possible that many who will have no opportunity may become successful in business, in the enjoyment of estates, and be elevated to public station and in the honor of all who may know them, yet very many of our boys and girls are to be impeded long, because their early education has been too much neglected. They will be obliged to accept inferior positions. They will be harder for smaller pay. They will be incapable of taking the

places in public life they ought to be able to fill, and to do which the town and the State require of capable and faithful men. They will be too likely to be subject to the intrigues of party leaders, the teaching of false theologies, or the suggestions of unwise scepticism. It is evident to the committee that very young people are now just on the point of manhood and womanhood whose parents have allowed their prospects to be darkened by denying them the opportunities the State and the town have for them. When boys, at sixteen, are not capable of casting in a vote, they will probably find it hard to manage their affairs in manhood, to keep themselves out of debt or to loan their surplus to a good advantage. And girls of the same age, who cannot conduct with ease and elegance, and know nothing of affairs, are not likely to make suitable wives for men who seek competence, usefulness and honor. The schools are neglected by many. Children are neglected at home. They are despoiled of their inheritance. The parent gets a small sum to-day, by the labor their children perform, and a large sum to-morrow; and the children through all their day of life have to regret the want of interest shown in their early education and the value of the Common School.

It ought to be understood that the best investment a man can make is to educate his children. Every man who has a family should have a savings bank in his own house. He can command a larger interest than any stocks or bonds or mortgages can pay; and he can put him in something better than greenback currency or in gold, even as a pecuniary investment often immeasurably larger.

The work of teaching ought to be well paid. It is among the hardest kinds of work that anybody can perform. It is not only labor; brain-work. Let any man, who would consider what his work is, sit down at his ledger or other accounts, three hours of the time for two halves of the day, and see if it is not fatiguing; and still more, let him undertake to explain his accounts, not only to those who can and who desire to understand them, but to those who can't or who won't take the trouble to understand them; and let him try and keep in quietness twenty, forty or a hundred children at the same time so as not to interrupt him; and let him feel, too, that the expectations of the people, parents and committees, are upon him, and that he must satisfy them all, and make them think that his manners are as good as his temper never betrayed into fretfulness, and that his work is regularly and successfully performed. A teacher, who means to do his duty,—and such we believe are most of our teachers,—has a very difficult part to perform. It involves usually an immense strain upon the nervous system,—often the worst tax that can be paid.

The teacher has three, four or five dollars a week beyond her board, and, in proportion to the increased price of articles she must buy, more than used to be paid; her employment lasts about half a year, and so cuts up the year, that she can seldom find any employment in the intervals. Five dollars a week for half a year, or 24 weeks, would constitute a half-year's school, give her \$120; or about a dollar a day by the year. What day-laborer, just imported from abroad, that knows no more than only to wield his spade, will do so little? or what imported domestic that scarce knows how to keep a kettle clean, does not, through the year, require more for her wages than the accomplished daughters of our own farmers often receive, employed as they are to train the minds and characters of the youth of our people, to make them beautiful and honored in life, to help them to be successful in the world? Do we pay our teachers enough? The town that pays its teachers best, will, we may be sure, in the course of years, have the best educated people. It will exert the most influence on public affairs. Its farms will be best cultivated; its crops will produce the largest returns. We want accomplished teachers, even in an economical point of view.

School Committee.—E. BUCKINGHAM, S. MILLER, GEORGE FULLER, A. P. COOLEY, & W. FORD.

HAWLEY.

In this town, before the law abolishing the district system was enacted, the school-money was divided, one-half upon the scholar and one-half upon a property basis,—a method which, while it gave some of the larger districts money enough to pay a first-class teacher and her board six months in a year, left the smaller ones with the means to pay a second or third rate teacher from three to five months, and leave her board round at that. Now, the law abolishing school districts has removed this evil, by giving all our scholars the privilege of attending school six months in a year where they can be best accommodated,—a result which we think demonstrates the wisdom of the Legislature, as well as of the voters of this town, a large majority of whom voted not to return to the district system.

Superintendent.—CHARLES CRITTENDEN.

LEVERETT.

The record of this year shows that every scholar in this town gets some schooling (the average of more than a month), by the operation of the law of 1869. We are liable to lose the whole balance of

the State appropriation at any time, by the neglect of a small or their refusal to burden themselves by excessive taxation for maintaining their school. Is it just that any one should be deprived of the avails of the public provision by the fault of another? Is it alleged that the interest of the people in the schools is destroyed by the abolition of districts? Naturally we should expect just the opposite. The narrow district-bound interest should, with increasing improvement, expand to one town-wide; each tax-payer following the common interest of contributed money as far as it reaches, and demanding the expenditure of every cent. If our patriotism is limited to our family lines, it ought in reason to be expanded by some other interest. Until we feel an interest in all the young, a district is the true limit of our narrowness. A great part of the tax-payers have no interest; they would naturally feel for all an equal interest in regard to the application of their share of the provisions made. All other interests are equalized by town limits; so the school tax ought to be.

Chairman.—J. P. WATSON.

MONTAGUE.

There is a disposition too prevalent among many people, a stand-still policy in relation to our schools, treading the same old ground and repeating the same arguments year after year, exhibiting a full lack of enterprise and want of invention; and if the ideal class of people could be carried out, the masses would, as a consequence, be kept far in the rear of the age in which they live. Much of this want of progress may, in a measure, be attributed to the parents. They are derelict in their duty in not being more frequent visitors of our schools. They ought to go to the school-room and observe what progress, if any, is being made; and whether the teacher is competent for and faithful in the performance of his duties; and satisfy themselves whether or not the money tribute for the education of their children is being judiciously expended; and not leave everything in trust to the teachers and committees. Their presence would encourage the teacher, inspire the children with confidence and increased zeal, and make the duties of the school a labor of love, instead of one of onerous burdens. Parents should not suffer themselves to be thus indifferent, not only to what affects them immediately, but to the future interest and well-being of their children.

We would welcome any plan which might enlist the sympathy and coöperation of parents, and increase their interest in the schools. Some of our schools suffer for want of such interest. The

ors under an almost insurmountable disadvantage, who has to encounter adverse influences in the family and home of the pupils. Parents alone can secure in their children regularity and constancy of attendance, and a loving appreciation of the teacher's labors and self-sacrifices for her pupils. They should be familiar with the scenes of the school-room, and with the face of their teacher. The teacher should visit the home of the children, and make herself known socially there, but she cannot take her school-room with her. Parents must come to the school in person, would they gain a deep interest in the school. The committee and the teachers do most cordially invite parents to visit the schools. If the varied, difficult and exhausting work of the school-room could be understood at home, there would be more sympathy and less fault-finding with the teacher. Nothing can give us good schools if the people forsake them. The wisest provisions of law, the most liberal appropriations of money and most pains-taking supervision by the proper authorities cannot compensate for that. The very breath is gone, if the atmosphere of public interest is wanting. We must ask, most earnestly, that all will take the time to look on this matter, and seeing how much depends on them, will gather their most vital sympathies around these harvest-fields of mind and soul. See that no injury befalls them; let them want nothing of parental warmth or fostering care. All that is truest and noblest in the family and the community should find its way to the school-room; the best thoughts and holiest deeds should shed their selectest influence there.

The irregularities of attendance, the tardiness and absences that figure our registers as well as injure so greatly our schools, must at least, be traced back in almost every instance to the want at home of intelligent interest in the prosperity of the school. Parents do not know whether their children are at school or not, and one reason they are never there themselves. The teacher is blamed and left without sympathy because there is no adequate knowledge of her labors and difficulties. Let coöperation be established and maintained between home and the school-house, and incalculable good will be done to each. In some cases, as matters now stand, the only exception to entire indifference is passionate interference. Intermeddling has ruined hundreds of schools. It is better to bear and forbear than to attempt an obtrusive interference. So far from this, the parents should give teachers their sympathy and cordial support. They should sympathize with them in their perplexities, in their labors, in these nameless trials so constant in the school-room which unnerve the system and waste away the strength of a faithful teacher. Let parents give their hearty coöperation to the instruction of their chil-

dren, and soon poor schools will be less frequent and gooder will take a higher stand. More efficient work will be done, the teacher will have more time as well as heart to labor, the pupils will have an additional motive to induce them to use most of their privileges, even the approbation of beloved parents.

School Committee.—E. A. DEANE, DAVID CROFTY, EDWARD NORTON.

NEW SALEM.

The right way to do our work well is, not to have too many houses, but to make what we have something as they ought to be, pleasant, agreeable places for study,—and then get the most cheerful, intelligent teachers you can find, such as will draw forth the best thoughts, stirring up the minds of the pupils (the parents and some have done the past year) to get their lessons understood, and we shall thus encourage the teacher and the pupil to do their best, and shall be rewarded by their commendable acquisition. We are giving comfortable, quiet school-rooms, with maps and blackboards adorning the walls, and neatness and order are being inculcated, and we are inculcating a love for knowledge and all that appertains to it. We are giving the pupils associations that will be thought of with pleasure in time to come, and will make their future life more useful. They will be useful to the town, a blessing to the country, good to fathers and mothers and children. Happy is the town that is in such a position, and happy are its inhabitants.

School Committee.—D. EASTMAN, B. W. FAY, W. PUTNAM.

NORTHFIELD.

A careful analysis of tables, for a series of years, shows that there has been, in this town, general, not to say invariable, improvement. In all respects, save that of average attendance upon the schools, Northfield maintains a higher relative position than she has for many years since. It cannot be denied, however, notwithstanding the favorable showing of the tables, that the standard of education is much too low. The lack of interest in the good cause is manifest to itself too clearly in the bad condition of many of our school buildings. This matter has been brought to the consideration of the town for many years. The do-nothing policy—requiring no change, nearly the same, year by year—proves that there is a sad condition of things everywhere. Must these old, dilapidated school-houses be perpetually transmitted to coming generations? The hope was expressed in the last report, that the transfer of the school buildings to the

the town would open the way for their immediate improvement. That hope seemed about to be realized, when the town voted to begin the work by building a house in number three. But alas, that hope was doomed to disappointment. The year has passed without any change for the better. Now that our school-houses go back again to the control of the districts, we greatly fear that all improvement is indefinitely postponed.

It has been claimed by the advocates of the town system, that it would give us better school-houses. We shall be greatly disappointed if that claim is not established, by the neglect which will follow a return to the district system. The interest of too many seems to be confined to the theoretical question, Shall we have our districts? Now that this question has been decided in the affirmative, we hope that the victors will not repose upon their laurels. Let them look to the condition of their school-houses and cheerfully pay whatever increased taxes their improvement so imperatively demands. Some of the earnestness and zeal manifested in maintaining district lines, now be expended upon school edifices.

For the Committee.—T. J. CLARK.

ORANGE.

It is bad policy for scholars to be kept away from school, or to be allowed to stay away for any trivial affair, as they contract habits of indifference to learning, punctuality and system. Then again, lessons gone over, explanations made and ideas developed, which the present scholar loses the benefit of, and thereby not only his own progress is retarded, but the advance of others is impeded; for scholars irregular in attendance fall behind those who are regular, and thus come backward and a clog to a teacher's usefulness and a trial to his patience. A day's schooling lost, or even an hour's, is money lost, because "time is money." Who will not say that learning is worth more than money? It is safer too. It needs no insurance, is subject to no fluctuations or reverses of fortune, but is ever ready to be drawn for "drafts at sight or on call." We know money is power, and knowledge is power. But of the two, give us the power of knowledge.

We have noticed, in our visits to the schools, a desire or practice of reaching over the elementary principles of education, or taking up studies in succession faster than is deemed proper in some cases. We would have no one infer by this, that no study of a higher grade is pursued until a lower one is completed. No; we do believe in a judicious gradation of studies—fundamental

truths understood, then a basis for onward advancement. In the erection of a building, the foundation is first laid, then the superstructure. The youthful mind should start right and go ahead as fast as age and capacity will admit. It should not be loaded down with too many exercises, as is the prevailing custom now-a-days. A thorough, rather than a superficial knowledge should be the rule, and not the exception. It is not the quantity gone over, but how well it is understood and remembered that makes the learned scholar.

School Committee.—S. S. DEXTER, H. W. KNIGHTS, A. E. BROOKS.

SHELBURNE.

Without doubt it is the desire of the inhabitants of the town of Shelburne to get the best return for the money expended in the education of their children.

Then the question, "How shall that money be expended?" is one of no small importance and requires thoughtful consideration.

Shall we give the power of engaging teachers, of having particular and watchful care over all the schools, to a committee in accordance with, and to carry out, the intent of the new law of the State? Or shall we do as we have done the past year, appoint a member of the school committee from each one of the old town limits, to have especial charge of one school within certain limits, and pay but little, if any, attention to any other school?

It has been said the people living within these limits know better what they need than any one who does not thus live, and can manage their schools better for themselves than others can manage them. But we are inclined to think that this method of management is a mistaken one. The member of the committee who has charge of a single school may know how that school is conducted, may know all the good points of the teaching in it, and see that it may be satisfied that it is a good one, and rest content with what he has. But other teachers may have their excellent teaching, of which he knows nothing, and does not learn, because all the time which he devotes to school matters is devoted to the school under his immediate charge; and thus the good things of one school are confined to that school; they are not introduced into others, nor are the good things of others introduced into that.

Better would it be for the town to "require the school committee annually to appoint a superintendent of public schools."

er the direction and control of said committee, shall have the and supervision of the schools."

his officer, visiting every school and making himself fully acquainted with what is best in each one of them, is in a position to introduce into each one the best features of all, insisting upon every real improvement and the discarding of everything that should among the dead and buried things of the past.

We therefore hope that this needed change in the management of our schools will take place, that they may attain a still higher standing.

School Committee.—B. V. STEVENSON, D. ORLANDO FISK, PLINY FISK, GEO. N. H. DAN. R. BARDWELL, WILLIAMS T. PECK.

SHUTESBURY.

The town has already voted to return to the district system, but believe that we now have too many districts in town, and that we want to take some course to lessen our number, in order that we may have a more equal and economical distribution of money, and be able to have six months' schooling in every district. We have districts in town where the past year there were only two scholars. It would seem like throwing away money to attempt to maintain a school in those districts; besides, the town would be very unlikely to raise a sufficient sum to support ten schools six months; consequently we should lose our share of the income from the State, as well as have a small amount of schooling.

School Committee.—G. A. BERRY, H. HAMILTON, A. P. BROWN.

SUNDERLAND.

With the Primary School, the year has been one of uninterrupted prosperity. Through the untiring efforts of the teacher, pupils in the school have made remarkable progress, and these labors have been appreciated to some extent by those parents who are most familiar with her method of teaching little children. There are, however, a thousand little acts of kindness that win the esteem and love of pupils, and tend to cultivate the nobler powers of the soul, which pass unnoticed by the casual observer, and are never published to the world, but they are indelibly written upon the hearts of those who sympathize most fully with the teacher in her efforts to do good to the children under her charge. Let any man sit an hour in our Primary School room, where a large class are being

taught at once to read, spell, write, and even think, and eagerness with which the little ones bound along the gradu then if he is not stupid or purblind he will see the advantage of the method over that of calling up pupils singly and have them repeat the letters by repeating them after the teacher. But this sort of thing requires an artist's head and hand. The primary teacher must bring to her task professional knowledge and skill; she must be the animating soul of the school-room; must understand the various avenues of approach to the soul of childhood, and none but accomplished teachers should be placed in charge of the classes in our Public Schools.

Truants.—The committee have met with unusual embarrassment and perplexities during the winter, caused by a class of pupils who spend their time loitering about the street rather than in the school-room. Had the town made such provisions and arrangements for dealing with this class of absentees as are required by law, it would have been the committee of considerable care and anxiety, and its influence would have been manifest upon at least one of our Public Schools. Whatever may be true of a general compulsory education system, there can be no doubt respecting the value of measures to prevent truancy and vagrancy. Some of the absentees from our schools the past winter have been such in spite of the efforts of the parents. They have broken through parental control. They are growing up in ignorance, spending their time in idleness, and ripening into criminals. An officer charged with the duty of visiting all absentees from our schools without leave, would be of great use by parents, and the mere existence of such an officer in communication with parents and teachers, would in our opinion prevent most cases of truancy.

School Committee.—LEVI P. WARNER, ALBERT MONTAGUE.

WARWICK.

Selection of Teachers.—The selection of teachers is the most important duty imposed upon the school committee. A well-chosen and efficient teacher will succeed and maintain a good school in spite of all the disadvantages of meagre accommodations, lack of funds, and smallness of school, and under all ordinary conditions will control every tendency to insubordination; while a teacher of mediocrity in mental acquirements, destitute of a love for teaching, or tact in executing plans, is in a constant state of self-doubt, checks that enthusiastic love for study and progress which is instinct with children, and so not only becomes a dead weight

success of the school, but by virtue of that destructive influence which want of adaptation always develops, positively cultivates and encourages unawares a spirit of contempt for both teacher and school, which never fails to end in the total ruin of the school; the worst feature of such a condition is, that those pupils who under good discipline are managed with no difficulty, who are earnest to improve, and have the highest regard for a good teacher, become the most contemptuous and insubordinate. As a universal rule, the most active and hopeful minds have the most utter contempt for all means and failures. Stolidity and stupidity are easily satisfied and are generally content under any circumstances. As a universal rule, philosophically true, "as the teacher so the school," comprehends the whole matter.

Our schools are so small, our means so limited, all our appliances inadequate to meet the real needs of our children, or the advanced methods of instruction which are now so universally employed, that our teachers can succeed and keep our schools up to the high standard required by the progress and spirit of the age, only by the constant exercise of that degree of sound judgment, studied discretion, ready tact and wise adaptation, which we cannot justly expect in those so young and with such limited experience as most of our teachers possess; yet the risk would be much decreased if the local committees would make it a rule, with, if possible, no exception, to employ teachers belonging to the town. For the past two years all these teachers who live in town have been successful, while those who come from other places, with just a single exception—and that teacher has taught so long in this town that she ceased to be a stranger—have fallen below the general standard; and most of them have signally failed, chiefly owing to a want of knowledge of the conditions which they have assumed.

Our resident teachers understand precisely what our schools require. They are able to avoid all the mistakes which strangers almost inevitably commit. They can teach as well the first day and accomplish as much the first week as at any subsequent time. If local teachers were employed, strictly examined at least once a year, and then given to understand that when they fail to instruct well and govern judiciously they will be removed, and parents do their duty, nearly all our school difficulties would cease.

For the Committee.—W. M. A. P. WILLARD.

HAMPDEN COUNTY.

AGAWAM.

The condition of our schools for the past year has been signal advancement. We hazard nothing in the assertion that they far excelled those of the preceding year in general management; in superior qualification of the teachers; in discipline and improvement. Thoroughness in teaching was a prominent feature. There was a mutual good-will between scholar and teacher, which, to a certain degree, promotes the prosperity of schools. The teachers were devoted to their work. They have by example evinced more interest than many who preceded them, and have labored more fully to excel in every point. While comparison might be considered invidious, in our opinion there are seldom or never better schools than the four in the west parish during the winter term. A large cause of their prosperity, aside from the teachers and committees, is the notice the interest taken by the resident ministers; and for sympathy and aid, they receive the most grateful acknowledgments from the committee. We were happy to meet them at some of our visits to the schools.

In former reports we have spoken of the advantages which accrue to our schools from gradation. No one can be so ignorant as not to be convinced of the utter inability of one teacher to manage a sort of justice in a school of forty scholars or more, some of whom are just commencing the alphabet, and others pursuing the higher branches. One of the greatest evils is a mixed school. It wastes time and money which ought not to be tolerated for a moment. The only remedy is in graded schools, where those of near equal attainments can be taught by a competent teacher. We drew attention to this point in our report of last year, and an effort was made to provide suitable accommodations for this purpose; but we must say that our efforts failed. The attempt to secure the object needed, developed some singular facts. The heaviest tax-payers, in many instances, and those who had no scholars, and in the towns would be least benefited, were most forward in urging a consideration of the subject; while those who paid only a small tax and have most scholars, and no other way of educating their

who never sent their children regularly and punctually to any school, were its most bitter and determined opponents.

We have a word to say in relation to the district system. We had hoped that this vexed question was forever settled by the Act approved March 16, 1869; but the pernicious legislation which followed, in 1870, conferred upon the towns the right, under certain provisions, to return to the district system. A more unjust and mischievous Act, we believe, never passed into a law. So great an obstacle, in our opinion (in addition to all others with which committees are obliged to contend), never was thrown in the way of the advancement and prosperity of our schools. Its unequal operation was directly in the way of all progress. From many causes the system had become obsolete. When it was first adopted, it was probably the best plan of maintaining Public Schools. But the circumstances which required its continuance have all passed away. At that time we had no centres to which population found its way. But now, flourishing villages in the limits of old towns have sprung up as if by magic, while other portions of the same towns remain about the same. It has become necessary to maintain more schools, to meet the wants of those who are brought together by the inevitable laws of change. So, while we have now districts where there is a large number of scholars, in others there is a small number. The people in the small districts (we speak now in reference to our own town) demanded as long terms as in the large ones; but the practice of dividing the money upon each scholar, left a sum so small for the support of the schools in these districts, that the terms were short. To remedy this, the unjust measure was adopted of taking a large portion of the money from the large districts and giving it to the small ones; as a natural consequence, it cost eight dollars a scholar in some schools, and two dollars in others. But the abolition of the old system obviated all these inequalities, and by putting the small schools together, the number was diminished, and all were placed on equal footing with regard to length, and quality of teachers. The law allowing the higher branches to be taught where, in the judgment of committees, it was deemed best, augmented the evils, because it deprived us of the means to secure the services of competent teachers. These branches were not required in the small schools, and so the large schools, in which there were many scholars who otherwise might have pursued these studies, were deprived of the right and privilege by the unjust appropriation of the money.

In this connection it is pertinent to notice the fact that at a meeting called for the purpose, in November last, the town voted to return to the old system, but it was subsequently ascertained that nothing was

done legally, and no organization was effected in any district. After a delay of four weeks, the committee were obliged to get the machinery in motion. Several vacancies occurred in the schools, and the uncertainty occasioned by the action of the committee rendered it exceedingly difficult to obtain good teachers, though they were engaged. We had decided to have competent teachers or none at all. Much time was spent and great expense incurred to find teachers. It was only by chance that we succeeded in filling the vacancies. I have spoken of the teachers and schools in another place. If the old system was the best, why were there so many applications for situations? Why did teachers who had been rejected by the committee apply to those who they supposed would be chosen by the committee? Why was it that the usual amount of chicanery and manoeuvring was set in motion, to place favorites in schools, regardless of qualification? Why was it that those teachers who had been rejected were so persistent in their efforts to get into the schools? And why were they encouraged in this course by their friends? Did they suppose the committee would stultify themselves by rejecting those whom they had once, twice, and even thrice employed? They knew we set them aside on the grounds of incompetency for no other reason.

Now, it is true, and we defy denial to the assertion, that opposition to the new system comes from those who are most ignorant of the essential qualities of a good school, and from those who are least interested in the cause of education. And further, we aver, without fear of contradiction, that our schools have improved more, since the true elements of prosperity, since they were under the supervision of the town committee, than ever before. The discipline is better, instruction more thorough, teachers far better qualified, there has been far less insubordination; the scholars have been more quiet about the school-rooms. We have not heard complaints on this point, as almost always heretofore. And during the winter term we have not heard of the complaint, once so frequently made, that teachers were not qualified to teach every branch required. Moreover, we have had (in the winter term) some more scholars than any who have before attended school.

School Committee.—SAMUEL FLOWER, CHARLES C. WRIGHT, JAMES H. FLETCHER.

BLANDFORD.

One year ago, it was your pleasure to elect me Superintendent of Schools. Of course, it was a novelty for a woman to assume this position. At first, I shrunk from the task, it looking too formidable.

after careful reflection, decided it was a providential opportunity to do some good to the youth and children of our town.

It has been my privilege for a few years past to visit various schools of different grades, in our cities and large towns, especially at the West; so I felt that I had not come to this work wholly unprepared.

I am compelled to say I found our schools much below what they ought to be; some of the essentials for the foundation of a good common education have been sadly neglected. Many of the teachers employed in our schools for several years past have been educated in these schools, and have had no opportunity to profit by attending schools of higher grade out of town. As a general rule, schools taught by such teachers, successively, will degenerate. Those teachers who have had an opportunity to attend some Academy or Normal School, and have a tact to teach, will succeed in bringing our schools to a higher standard.

We have had thirteen different schools,—one of three terms, eleven two terms each, and one of one term. In these schools we have employed nineteen different teachers, and some of them as good teachers as are often found in our country towns. Ten of these teachers have taught in our schools before this year. I think I am safe in saying, that not over one-third of the nineteen teachers have ever attended any High School or Academy. Only four of our schools have employed the same teacher through both terms, and three of these showed commendable progress. We hope the committee will secure those teachers this spring, who will give satisfaction one year, at least, in all our schools.

Reading I found had been very much neglected in all our schools,—perhaps I should not say neglected, for nearly all the scholars were struggling in books beyond their comprehension.

The truth is, the teachers (or parents) have wished to push their children ahead, thinking thereby they were advancing, when really they were not taking the first step towards a good reader. I found some trying to spell out lessons in the Third Reader, that could not read intelligibly in the Primer, and some trying the Fifth Reader, that should at least be reading the Third Reader. I am satisfied, this kind of pushing scholars on will never make them good readers. I am happy to say, that those teachers who put the children back and drilled them on short lessons, saw great improvement. Very good attention has been given to spelling, and with good results.

Superintendent of Schools.—Mrs. JANE C. ROBINSON.

BRIMFIELD.

Although some of our schools have not been satisfactory during the past year, others have realized our highest expectations, the latter generally, being as far advanced in some of the studies pursued as could be desired. The good have been very good, and continued experience and observation have strengthened the conviction that the system of instruction which we have labored to introduce, and which is now becoming general, is well adapted to youthful minds. We educate in the truest sense, when we draw out what is in the mind; we fail when we seek to put in that for which there is no room. Hence, the first step is to develop ideas by the most simple and familiar illustrations, and then to express them in the simplest language. Language, of itself, often fails to transmit correct ideas. It conveys more to the scholar's mind a knowledge of the structure and use of the English language than it can teach him to be a mechanic. Such eminent teachers as G. B. Emerson and Colburn asserted, years ago, that "grammar, if taught to advantage to the most advanced pupils, must be taught orally." They at the time usually occupied in learning to parse should be devoted to studying the principles and uses of the language, and say, what a careful observer must have noticed, that "the most adroit scholars are often unable to write a single sentence grammatically." This method is now sometimes called new was adopted by the highest schools nearly thirty years ago, and circulated in every school in the State by the private munificence.*

If it be important to teach a child to think, it is no less so to teach him how to express his thoughts definitely and readily. The art of expressing ideas with facility and elegance in writing, has heretofore been but little cultivated in our schools. This faculty is a rare but a very desirable accomplishment, and the experience of the past has proved that it can be attained to a good extent by most pupils.

We are decided believers in the doctrine of rewards and punishments. We would punish only as a last resort, but we would reward every good act—every heroic effort. Kind words and approving smiles cost little, but they are very effective. No objection is made to material rewards, if they be judiciously distributed; they should never be bestowed in such a manner as to excite any rivalry or ambition. We think it safe to say that no reward should be offered unless every member of the class cannot hopefully and honestly come up to it. Offering rewards for the best recitations stimulates those who

stimulus and discourages those who do. As we recall the long array of doleful countenances, without a shadow of hope or expectation of gaining the prize, that have ever been found at the foot of our classes, we feel that the head may properly be the post of honor in the best department, but not for the best speller. If a scholar be fortunate, charity would compel us to give him a position where he, at least, would not be as conscious of his deficiency. If our schools do not elevate, they must not depress.

We earnestly recommend that the town take some measures to see that trees to be set upon their school grounds. By such means we beautify our homes and make them pleasant and attractive. Why not ornament those sacred precincts where our children get so many of their first impressions? Why leave them bleak, barren and desolate as an ancient churchyard, exposed to the heats of summer and the frosts of winter, when a few dollars or a little personal effort will make them attractive and comfortable for generations? Can our children ever be correctly educated while surrounded by such deformities?

School Committee.—J. L. WOODS, W. F. TARBELL, F. D. LINCOLN.

CHESTER.

The removal of pupils from the school a few weeks before the close of the term, is a practice by far too common in this town. The time thus lost is that which is usually devoted to a general review; and the pupil who loses the final review, loses at least one-half the benefit of the school. In some cases, the pupils are removed on account of a dislike toward the teacher. It is useless to argue on the folly of such a course, for the person who would thus inflict an injury upon his own children, to gratify a spite against a teacher, cannot be reached by argument.

The custom of providing board and fuel, by voluntary contributions from the people, has become almost obsolete. We regard this change as an improvement. The advantages to the teacher of a fixed board-place, instead of "boarding around," are considerable. Besides, it is only justice that the expense of our schools should be borne by the town and raised by fair taxation.

School Committee.—C. M. BELL, I. L. BOND, JOEL HASKINS.

CHICOPEE.

At the beginning of the year we introduced the study of drawing; and which, by legislative Act, that study has become a requisite in

the Common Schools, and we are happy to say that, after a year, our anticipations have been realized in regard to the importance of this measure.

Feeling deeply the need, however, of an accomplished teacher in the two departments of drawing and writing, who should devote his time exclusively to these branches, and circulate through the schools, taking the general oversight of the drawing and writing, and aiding the teachers in this work, we were enabled at the beginning of the second term to secure the services of Mr. G. J. [Name], who, by his accomplishments and devotion to his work, has effected a most gratifying change in these two departments of education.

The writing books, as a general thing, show, both in their appearance and the correctness and uniformity of the writing, the advantage of the mode adopted by the teacher, of having the whole class move together, making the same part of the same lesson at the same time, at the word and under the eye of the teacher. The advantages of this mode of teaching must commend themselves to every thoughtful mind.

The drawing, considering the time that has been devoted to it, has reached a very satisfactory result. We anticipate much pleasure and profit from this department of education, and earnestly hope the time is near when ability to draw neatly and with facility will be an essential qualification for teachers in our Common Schools. That teacher who possesses the skill to promptly and artistically represent upon the blackboard any familiar object, a piece of furniture, a tree, flower or house, possesses an accomplishment that measurably enhances her worth as a teacher in any school. We derive nothing of the practical utility and personal enjoyment to be derived from the acquired skill.

We feel, therefore, in view of the experience of the past year, that the drawing and writing teacher has contributed greatly to the prosperity of the schools, and are prepared to speak both of his work in the highest terms.

The question of appointing a Superintendent of Public Schools has not, to our knowledge, ever been brought before the town. It has long been the opinion of some of the more thoughtful persons, and those who have been the most conversant with the schools, that a superintendent of the right stamp, who could devote his whole time and energy to this department, would supply a deficiency long felt, and greatly add to the efficiency of the schools. This opinion has been gaining until, if we read the public sentiment correctly, it has become quite general. We are not indiffer-

question, but are unanimous in the opinion that the growing sentiment in favor of this measure will soon demand its adoption.

School Committee.—H. HITCHCOCK, E. B. CLARK, CHARLES SHERMAN, J. E. DAVENPORT, JOHN S. HERRICK, B. B. BELCHER.

LONGMEADOW.

Under the old district system there were insuperable difficulties. The double-headed plan of two committees defeated all unity and permanency of effort for the improvement of the schools. But under the present system, there are no difficulties that due consideration and an enlightened judgment may not easily overcome. If you think that as good or better schools can be secured with less money, the remedy is in your hands precisely as it used to be. You can lessen your appropriations. If you have not confidence in the discretion of your committee, you can replace them by those who may be, in your judgment, wiser men. Probably not one of them would feel aggrieved, and if he did, it would not matter much. Nothing would ensue like the late scene in the United States Senate. You can change your school committee as you like. There is no necessity for constituting them a nominating committee when vacancies are to be filled, nor of accepting their nominations, if made.

If you desire to have each locality that used to be a district personally represented, you have only to enlarge your committee to secure that end.

There is no possible hindrance to the success of your school that cannot be got at and removed with ease and dispatch, under the present system. All we want is, to have the real or imagined hindrances and defects pointed out and discussed. There is nothing that your committee need and desire more than that all their plans shall be thoroughly considered, and that there shall exist between them and their fellow-citizens the fullest and freest interchange of views.

If anything goes wrong, or is likely to go wrong; if there is any doubt in the minds of any about the wisdom of appropriations that are recommended; if there is any apparent lack of fairness in the relative appropriations for school-houses, let the committee be made aware of such doubts,—let us know every suggestion and every criticism. We are only your executive, and we shall thus be able to serve you better. Only let the questionings, suggestions or criticisms of your fellow-citizen, whether in public or private, be made good-naturedly, frankly and explicitly. We sometimes hear vague and blind remarks about a school or a teacher, which seem to indicate that something is wrong, more or less. But we cannot tell whether it is more

fluence upon those who are disposed to do well, and the whole school becomes infected and difficult to manage.

For the Committee.—JOHN W. HARDING, ALBERT I. DUTTON.

LUDLOW.

Our School-houses.—It may be said that this is an old story, but as long as the two largest schools in our town are obliged to occupy buildings worth less than one hundred dollars each, the town may expect that their committee “will keep it before the people,” until suitable accommodations are provided. When houses, and even barns in our town, are frequently built, costing from one to four thousand dollars each, there certainly can be no excuse for further delay in building two new school-houses, and in putting the others in good condition.

The Raising of Money.—When men of means, and of large pretensions to patriotism and an interest in the welfare of the young, are willing to raise but twelve hundred dollars for a year’s schooling of two hundred and fifty children, divided into nine schools, those in moderate circumstances, who have children to educate, may well be grateful that the State, and not our town, enacts its school laws. Complaint is frequently made that the population of our town is diminishing; that while many of our young people are leaving, but few are coming in to take their places.

When we consider the condition of our school-houses, and the small appropriation for the support of schools, no one need be surprised that such a state of things should exist. It is for the interest of the town, financially considered, to make its school-houses, with their surroundings, as neat, comfortable and attractive as circumstances will admit.

Good school-houses, as well as churches, and all public buildings, tend to enhance the value of real estate in all the surrounding community. Your committee would respectfully, but earnestly and persistently, urge upon the citizens of our town the importance of raising a sum of money sufficient for the support of all our schools three terms the present season.

School Committee.—C. L. BURL, ADIN WHITNEY, JAMES O. KENDALL.

MONSON.

School Examinations.—The duties of the school committee require them to attend school examinations, and to visit every school at least three times every term. In so doing they are supposed to see

for the public. But the public ought not to be so absolutely ignorant as they are in too many instances. Nor is it the duty of the public only to visit the schools. All persons of all occupations and professions are vitally interested in the Public Schools, and should therefore become familiar with them by actual inspection.

An agricultural festival will call out the community, old and young, to inspect a show of poultry and pigs and fast horses. A game of football will attract hundreds to witness a match effort, not of mind but of muscles. And the monstrous assumption of absurdity is by so many admitted, that such games are in the interest of physical exercise and development, when the fact is, that hundreds simply look on and lounge, while nine gamesters on a side furnish physical exercise. This is the principle of imputation, for the benefit of the whole community.

Why will not the public take an interest in matches of skill? Why will parents go to neighboring towns to admire the growth of dumb beasts, and neglect utterly the intellectual growth of their own children as a matter of no personal concern?

Why shall citizens interest themselves in common roads and in common homes for the poor, in common burial-places for the dead, and give no concern to the Common Schools, where immortal souls are trained to habits of correct thinking and fit expression, and to good behavior?"

In behalf of the School Committee,—C. HAMMOND.

PALMER.

In the opinion of your committee, facts plainly indicate, in the mildest possible term, a duty not performed. We do not have for a twelve thousand dollar appropriation, though we have no doubt it could be advantageously expended. But we do deny the duty on behalf of our youth—not as a favor, but as their right and our duty. A sum of money large enough to enable us to place at the heads of our schools first-class instructors, not mere amateurs, incompetent book-keepers or pastime seekers, but earnest, honest, capable teachers. The time with which this happier state of things may be attained, makes the shame of our present position all the greater.

Another thing needed, in order that we may do our whole duty in the establishment of a school of a higher grade than any we at present possess. It matters not how much attention we may pay to the Primary and Intermediate departments, it matters not how much perfection we may bring our Common Schools,—these all-important series of undeveloped powers, that endow the future with grand

ities,—we merit not the “well-done” of our consciences, unless we provide for the continued education of our advanced pupils, the graduates of our Common Schools.

What is needed is a High School, in fact as well as in name,—an institution which shall offer to those desirous of obtaining a liberal education all the advantages afforded by the neighboring Academies. The High School which we maintain fulfils the letter of the law, but comprehends not the spirit.

To make our High School what it should be, and thus obviate the fortunate necessity that forces those desirous of a thorough and practical knowledge of the higher branches of study to become students of the Academies of Wilbraham and Monson, is clearly our first duty. Therefore your committee would recommend the selection of some central location, suitable for the purpose, and the immediate erection thereon of a building to be used solely for a High School. Let the completion of the edifice mark the inauguration of an efficient school, able to compare with any in the State. As a connecting link between the Common Schools and the College, High Schools are a necessity. As an auxiliary to both, they are invaluable, and in the plan of liberal education they form an important part of the symmetrical whole. In making this proposal, we are encouraged by the belief that our report will be acknowledged to be a correct one, and that the intelligence and foresight of a majority of the voters of Palmer will lead them to adopt the course we have recommended.

Chairman.—SILAS RUGGLES.

SPRINGFIELD.

Apart from the Training School, where changes at least once a year are expected, there are only ten teachers in the schools now who were not here a year ago, and of these ten, at least three or four are in addition to the number employed. The advantages of this greater permanency are apparent. The teacher gains a knowledge of each individual pupil; knows his habits, tastes, the excellences and the defects, the strength and the weakness of his character, and, knowing them, knows how to adapt himself to the pupil. The pupil also knows his teacher, and renders usually a cheerful, hearty obedience in return for the love and kindness bestowed upon him. Hence, the success of a well-qualified teacher becomes greater term by term, the discipline more easy, the instruction better adapted to the pupil and better appreciated by him, and the resort to corporal punishment reduced to measures of severity less and less frequent. This can hardly be otherwise, for the relations, at least so far as the feelings of the

pupils are concerned, and to some extent, doubtless, of the teacher also, become changed. When the teacher enters the school as a stranger, the pupils feel that he has come into their school; they are oftentimes disposed to show what can be done in their school; to see what can be done in his; but, as term by term and year new pupils come under his charge, they come into his school, and he into theirs.

In the Primary Schools, a large part of the instruction is given orally and by object lessons. Oral instruction also enters largely into our Grammar Schools. This the "Course of Study" requires, and the best interests of the schools demand. The teacher must give instruction in the science of common things,—in physics, in chemistry, in physiology, not in their technicalities, but in their bearing upon life. And this he must be able to do without the aid of his hand at the time. A candidate for a teacher's responsibility, in reply to the suggestion that her examination showed a want of proper qualifications, innocently remarked that she should have had more difficulty in the recitation, for there she should have a book in her hand; time for that kind of teaching, if teaching it may be called, is not by, and the teacher is expected to know whereof he affirms. A school committee, people, or pupil will be satisfied with the teacher who, unless he has the book in hand, knows less of the subject than the pupil reciting. If a class of geography be before him, he must be able to draw a map and locate the places under consideration; he may perhaps to take his class on board an imaginary ship, and name the places named, and, when the time allotted has expired, be able to resume his voyage another day. If it be a class in history, and the lesson be an account of a decisive battle, he wants to be able to find from sources of information within his reach, to supplement what the pupil has learned, and thus give a better and more vivid picture. If it involve the action of Congress, or a history of an institution, as much of our own history does, he should be able at the time to unfold somewhat the principles of our government, the different departments, the duties of the various officers, and this is necessary to a correct understanding of the lesson, and, in this, is a thousand-fold more important to an American citizen than the knowledge of the exact location, population, latitude and longitude of Zoar among the mountains. If it be a class in percentage, he must for the time being convert his school-room into a place of business—the insurance office or the broker's, the commission merchant's, the banking room—and, standing there with his pupils, make them understand the business transactions which give rise to the problems they find in their books. There is a great deal of work in this,

Our teachers are doing this work with constantly increasing success. An Act of the last legislature, drawing is made a required study in our Common Schools, and is placed upon the same footing as penmanship or arithmetic. It was accordingly introduced last summer term, without extra expense for instruction, as no special teacher is employed. The parties interested in the system used, sent a competent teacher at their own expense, who met the teachers and gave them instruction, who also met their schools and gave the opening lessons, and since that the teachers have given the instruction. Many of them had given the subject no special attention before, but with the aid of a manual well adapted to its purpose, and especially by doing the work themselves, they have been able to overcome all obstacles. It is not expected that we shall make artists of many of these pupils, indeed not any of them; that is not the design. To train the eye to see and the hand to draw a straight line is no easy task, and the ability to draw such a line is no mean acquisition. The pupils have had more than a year of instruction and practice; they have not yet completed their first book; but already the benefit is seen in their improved map-drawings.

The same legislature required cities of ten thousand inhabitants to maintain a school for adults—a School of Industrial or Mechanical Drawing; and to comply with this requirement, a room in the city hall has been fitted up and a school opened. It is placed in charge of Mr. C. A. Emery, who is assisted by Mr. E. P. Hemenway, and is yet hardly in full operation.* More than one hundred have given in their names for this school, most of them mechanics, and their ages range from fifteen to fifty years. It was the intention to give each pupil two lessons a week; but so many have been the applicants, making so many divisions of the class necessary, that for the present at least, only one lesson can be given.

The passage of a law requiring free-hand drawing to be taught in our schools was recommended by the State Board of Education. The committee on education reported favorably, the legislature passed the bill, and the governor approved it. These various parties thought the proposed instruction would be of such advantage to the children and youth of the Commonwealth as to give them an equivalent for their time, attention and labor. And yet there are parents who know that it will do their children no good. And this in spite of the fact that such and so many persons hold the opinion just expressed. But of what worth are mere opinions when placed side by side with positive knowledge! They know this, in spite of the fact

* January 1st.

that it is not always easy to see with perfect clearness what tastes are, what his occupation, what his means of livelihood, and what years in the future may be. They know it in spite of the fact that many of all ages and of so various trades and employments have entered the draughting school, eager to gain that knowledge which was not placed within their reach in their school-days, the need of which they feel in every-day life. What a comfort it is to know!

The Training School is doing its work, teaching a little over two hundred children, and fitting teachers for the instruction of the government of other schools. No less than ten of the teachers are successfully working in our schools, have spent a longer or a shorter time in the Training School.

The Half-time School has been crowded out of the new building at the Orchard into the old one; but it presents even a stronger case for its life than at first; for it now holds all day, one part being in the morning, another in the afternoon. Still, there are doubtless some children of school-age in that village who do not meet the law's demands in the matter of attending school. There are two Evening Schools, the one in the city proper, the other at the Orchard. The one here is in charge of Dwight Clark, with several teachers; the other at the Orchard, occupying two rooms, is in charge of Mr. M. J. McDon and Richardson. While these schools are to some extent a substitute for the day school by some who ought to be in the day school, they furnish to many the opportunity of acquiring the elements of an education which will be of great service to them in the future which they could not obtain elsewhere. There are about twenty pupils in each of these schools.

In former reports I have urged some better provision for the Half-time School, and I trust I shall be pardoned if I again urge it, and state with some detail things desirable for such a school.

The school is intended to have an effect not only upon the children sent there,—to reform them,—but upon the schools of the city to prevent truancy; and any estimate of the value of this school, without a comparison of cost and production, which leaves the other part of the account, as is sometimes made, leaves out an essential part. In estimating the value of a house of correction, we must not ignore the safety of a citizen and the good order of society.

But to reform the boy and make him a good citizen is not enough; he must be taught, for truants are mostly from the lower grades of education. Hence he needs a teacher. He needs also a matron—one who can be to him a mother, and give him a warm place in her heart. Most of the truants know as little of a mother, in any just sense of the word, as Topsy did. The teacher and the matron may or may not

the same person. He needs also a home—the family, with its social, moral and religious influences; for whatever may be thought of the moral element in our Public Schools, in a Reformatory School this element cannot be set aside. He also needs to be furnished with work, something adapted to all seasons of the year, partly that he may learn how to work, partly that he may lessen the expense incurred for him, partly that he may form habits of industry, but principally as a moral element in his reformation. He needs, also, a guardianship better than that furnished in a majority of cases by his natural guardians, a guardianship that shall decide whether to bring him before the court for trial, whether upon his reforming application shall be made for his discharge before the expiration of his sentence, and to provide for him and help him to a home at the time of his discharge. This is necessary for the truant. For the sake of the schools it is necessary that there should be room enough for all the truants—otherwise those inclined to truancy will, even with their small knowledge of arithmetics, calculate the chances of escape—and room enough, so that as long a sentence can be given them as their best good requires, and then a moral certainty that all habitual truants, girls as well as boys, will be sent there. There should be also truant officers, men who love children and will try to save them, men who know how to coach other men, and who will visit the homes of the absentees, and seek to prevent their becoming habitual truants, and who shall be strong in the finally incorrigible. Now, it is perfectly obvious that only a tithe of the things required can be obtained as the school is now situated. Is it, then, too much to ask that the city seek at once to provide the necessary accommodations? I say the city; for if the city makes the necessary provision, the responsibility and the control will be near, direct and single, and those having charge of it could oversee it personally and intimately. There is no call for a great institution, for an immense pile of brick and mortar. Family houses capable of accommodating from twenty to thirty pupils, a farm adapted to the purposes required, a workshop for the winter work, a matron and a father, and all under one general supervision, would be all that would be necessary. Should other towns in the county, as some doubtless will, wish to avail themselves of the advantages of such a school, such legislation as would enable them to do so could easily be enacted. There are other considerations, pertaining to the aged, the infirm, the poor at the almshouse, which are, to my mind, sufficient reasons for the removal of the school; but others have presented them. There is another evil closely allied to truancy, and out of which truancy grows so naturally and so generally, that it and its remedy ought to be spoken of in this connection. The evil is either non-

attendance at school, or frequent absence by permission of the remedy is compulsory attendance. Fifty years ago, asking parents to send their children to school would have been much out of place, in New England, as one requiring permission. They were eager to have their children secure the full benefit of school term, altogether too short for the education sought. Times are changed. A large class of our citizens do not learn as our fathers did, and the opportunity for children to work for fair wages, bearing upon the cupidity or the poverty of the parent, either keeps the child out of school entirely, or consents to his absence whenever he can find work. But why should not a parent be required by law to send his children to school as many months in a year as that town is required by law to maintain a school? Compulsory attendance for a part of the year is already recognized, but it seems to be based upon the child's right to an education, and the State's need of an educated citizenship.

Such are the laws with reference to the employment of children in factories, etc. But in the establishment of a Truant School, compulsory attendance is recognized, based upon the recognition of truancy as a crime. But does not the course pursued by the law tend directly to make the boy a truant? There is no honor in that which makes attendance at school a duty. The boy is allowed away from school on the slightest pretext. If, then, he goes thither, he learns of some show he would like to see, or of some to post bills, or scatter notices, and so secure a ticket to some pian performance, for all of which he would have obtained permission to be absent had he known of the occasion before he left. Should he not take the responsibility into his own hands, and avoid such sights? If there be a muster of some kind upon the parade in the interest of good morals, or a horse-race, politely called a trot in the interest of agriculture, the child is taken from school. He may sell cigars, or peanuts, or something worse, and so make money. When one child of a family has work, in a factory for instance, and another attends school, if sickness come to that household, the one must take care,—if the mother goes out to wash, another must "mind the baby,"—if the father's work is more pressing, some one must carry the dinner,—the child at school is "the one," not the child at work. And this is done oftentimes to keep poverty from the door, but for larger deposits in the bank of truancy.

Make it a greater pecuniary loss to take a child from school than from the factory, and we not only prevent the permitted truancy, but we create a home sentiment that will go far toward preventing truancy.

gain, the law does not take a man's property, or allow it to be taken, without an equivalent rendered. A note is not legal unless it contains the words "value received," and if the person who gave the note can prove that there was no equivalent, he can successfully resist payment. On this same principle, may not a tax-payer demand, as an equivalent for his school tax, that the child shall attend school? He has built a school-house, he pays the teacher. His property has been taken, but where is his equivalent? Not in the school-house, if the child does not enter it. Not in the power of the teacher to influence the child for good, if the child does not meet the teacher.

Does the parent the right to keep the child from school for the sake of his property, and thus compel the loss of the tax paid? But it may be said that parents actually need the help of their children, and that without them they must receive help from the city. This is doubtless true in some cases. But the tax-payer, the State, and the best interests of the child demand that he shall attend school, and our laws do not intend that any child shall be deprived of school privileges on account of poverty. Then let his attendance at school be secured, and though there may be higher taxes, there will be more intelligence, less poverty, and a better state of society generally.

Superintendent of Schools.—E. A. HUBBARD.

WALES.

It is difficult to get good teachers to teach in such houses in which some of ours are. We feel almost ashamed to ask them. To furnish good houses and teachers is not the whole duty of the parents. They should sustain their teachers and follow their children with their sympathies in their daily task.

To make our Common Schools the means of preparing the rising generation for the greatest usefulness, is worthy the ambition of every parent. The pupils are soon to fill our places, and whether with honor or dishonor depends in no small degree upon the training received in the school-room, as well as at home. Parents should visit the schools, and encourage both teacher and scholar by so doing.

In some of our schools not a single parent has visited during the school term, yet they clamor for good schools. Take hold and try to be such; visit the school and let the teacher see that you are anxious for the welfare of your children. Encourage, rather than discourage, by your absence and coldness.

In one school, at least, we feel much more might have been accomplished had the parents labored with the teacher; they need not make so great effort to have a poor school; now and then a word unfitly

spoken before children will secure it, while a word wisely help to make a good school.

School Committee.—H. A. MCFARLAND, D. F. PARKER, J. M. LYON.

WESTFIELD.

And your committee, in what they deem in furtherance of duty, desire to call the attention of the town to truancy first and a remedy for the evil. In a republic where the sovereignty is vested in the people, but who are required to delegate temporarily to others, to return again to them, to be again the electors should be universally educated. Our legislators long felt this necessity, and first provided for Public Schools at public expense. Since which time, various measures have been taken in the direction of compulsory attendance upon the schools, but no measure has yet reached the evil. And as the population of cities and towns increases, the evil of truancy seems also to increase. It is possible, however, that the legislation of the State has not yet come up to the importance attached to the question by the people. At least it would so seem, when we come to examine the provisions of the truant laws now on our statute book. The law already provides that "every person having under his control a child between the ages of eight and fourteen years, shall annually, during the course of his control, send such child to some Public School in the city or town in which he resides, at least twelve weeks, if the Public Schools in the town so long continue, six weeks of which time shall be consecutive; and for every neglect of such duty, the party offending shall forfeit to the use of such city or town a sum not exceeding five dollars." (Chapter 41, Section 1, General Statutes.)

But very little attention, so far as we know, has ever been given to the above requirement by other towns, and none by our own. It is quite possible that the majority of persons having control of children between the ages of eight and fourteen years, who neglect to comply with the law, are not aware of its existence or the penalties attached to it. But the law, while it is severe enough in its penalties, is without the duty of prosecuting for the offence on the treasurer or the selectmen. The duties of this officer are entirely foreign to a service of this kind, and as he is the only person authorized to institute proceedings, it may be seen by the second section of the same chapter, the law is rendered or quite valueless. The power to make the law efficient should be placed in the hands of the truant officer, with authority in the selectmen or committee to suspend proceedings, if the circumstances are such, in their opinion, as to make it advisable. There can

children from a certain age to a certain age should be compelled attend a Public School, or be furnished in some other way by their parents or guardians with certain educational advantages. The age of minority is an age of pupilage and discipline, an age for moral and intellectual training.

What we desire to say is, that it requires some education, some training, some thought, to bring a man up to that intellectual standard, requisite to appreciate the rights of others, and to properly control himself. But you cannot at once tame the ox to the bow, or the wild horse of the prairie to the harness. Both are made subservient to the wants of man by a slow process of training. A man is not fit to enter upon the active duties of life, without a previous preparation, than the untamed ox for the plough, or the wild horse for his owner's carriage. The law may attempt to restrain such a man, not so by physical force, or grated doors and stone walls; but the restraint is all external, and when removed, he is released only to be again restrained. What is needed is an internal restraint, applied by the individual himself. But it is difficult for a man who has grown unrestrained, from his infancy to manhood, to apply to himself self-restraint. External restraint must be applied by parents, guardians and teachers in the earlier years of a person's existence, if we would have him apply to himself self-restraint later in life. But only self-restraint should be exercised by others over the young, in any case as will insure their attendance at school, good behavior when at school, and diligence in study, with such lessons in morals, in neatness and propriety as may be necessary. Proper direction and instruction supply the residue.

Now, while a majority of the children in this town, and the State between the ages of five and fifteen years, attend school a part of the year at least quite regularly, there is a large minority that seldom or never enters the school-room. This class fills our jails and penitentiaries; this class is a moth upon the industry of others, a dead weight upon society. This class is made up of children whose parents are regardless alike as to the future welfare of their children or the influence they may exert on those around them. Now, the only way to decrease this class is to compel by law (and to put the law in execution) the attendance of children upon school from a certain age to a certain age. If the parent is too poor to furnish books for his child, this fact should be made known; if too poor to clothe him, this fact should be made known also; and books or clothing or both supplied if need be necessary. If too poor to otherwise support him, the case would of course pass from the control of the parent to the control of the town or State authorities. This town (and the case is the

same with many others), increasing from year to year in its cannot afford to allow one-fifth or one-sixth of its children in ignorance and vice. The whole number of children between five and fifteen years, as returned by the assessors this school year, is eleven hundred and thirty-one; while the whole number attending school is only ten hundred and thirty-five. This is far too large. It proves that our school system is not perfect. We have, in addition to the law already quoted, one (see Chapter 10 of General Statutes) which punishes habitual truants, and this is the only law upon the subject which has any force. But this is only for the infliction of a penalty upon the child. In the majority of cases it is the fault of the parent, and not the child, that the child is not in attendance at school. The parent should in all cases be looked to, and if the child is found incorrigible, unmannerly, and should then be dealt with. The truant officers should in all cases be empowered to commence prosecutions under proper restrictions, and then held responsible for not discharging their duty. If the truant officers were held as strictly to their duty as sheriffs and town officers, we should find the number of non-attendants upon our schools decreasing. The sooner legislators and electors awake to this, and provide effective compulsory measures to the end that every child from a certain age to a certain age shall attend a Public School, or some other, the sooner will crime decrease, and the more intelligent will be our public servants, because they will be aware that they are in the intelligent public to scan their acts. One-half the corruption in our civil affairs exists at the present time because the people are unable to detect its source, and hence do not know what remedy to apply to cure the evil.

Drawing.—By an Act of the legislature of 1870, drawing is required to be taught in all the Public Schools of the Commonwealth. The school committee believe this legislation wise. And though it was not to extend it into all the schools of the town, your committee are happy to say they have made a beginning, and that a class is now in the High School, under the supervision of Mrs. J. W. [Name], whose skill in the art is not easily surpassed. It was not until your committee, when application was made to her, that it could be obtained, but, in view of her interest in the High School, she most cheerfully accepted the labor.

Mechanical Drawing.—In addition to perspective drawing, the law requires the cities and towns with ten thousand inhabitants to teach mechanical drawing.

The school committee of Springfield opened a school for the teaching of drawing last winter with great success, and as the pe-

town approximates so nearly to the number which makes the compulsory, it would seem highly proper that such a school should be opened for the benefit of our mechanics; but your committee do not feel at liberty to open such a school without an expression of the part of the town.

Massachusetts, with a hard and sterile soil, cannot compete with Great West in agricultural productions. And if she would maintain her present relative importance in the Union, she should lend her energies in the direction of mechanical and manufacturing interests, and to do so her young men should have the best mechanical education; but how can they possess it without a knowledge of mechanical drawing?

School Committee.—M. L. ROBINSON, J. G. SCOTT, HENRY FULLER, P. L. BUELL.

HAMPSHIRE COUNTY.

AMHERST.

Primary Schools.—For the earlier lessons in drawing, or until the pupil has acquired considerable manual skill, slates will answer every purpose of paper, and are far less expensive. As the expense of putting into the several rooms slates of any of the approved patterns for primary use is slight, and this is the only sure means of providing every pupil with one, I would recommend that it be done at public expense. Again, those who are to instruct in the schools must be thoroughly furnished and qualified for this new department of their work. No novice, with eye uneducated to judge of form and distance with accuracy, and hand untrained to obey the will, is prepared to teach it with success. If a teacher is approved in other regards, and anxious to continue the exercise of her gifts in the sacred calling, let her exert herself in this respect to meet the increased demand of the age. If she lacks the skill, or the professional enthusiasm to do this, in her zealous compliance with the requirements of law and public sentiment, easily as it may be acquired, and invaluable as it may be to her in her school-room work, she has surely mistaken her calling, or continued in it too long. In either case she should at once give place to one who in all respects is determined to keep abreast of the times.

To insure systematic and valuable instruction in drawing, as also in penmanship, handwriting, and other incidental branches to which allu-

sion has been made, our course of study for the Primary should, in my judgment, be revised. The present one, general in its terms, leaves too much to the discretion of the teacher. Experience has convinced me that a majority of teachers need definite guidance, and that in order to secure uniform results in several schools the programme of study should be full and definite. The precise manner in which everything is to be taught should be so indicated as to trammel the teacher, but very clearly to define what shall be taught, and, so far as possible, how often taught. In this way, and in none other, can we secure certainty and system in instruction, and the desired uniform results.

Intermediate Schools.—Map-drawing from memory, so characteristic in the system of Guyot, has been better understood and appreciated by the teachers, and consequently better results have been obtained. This feature of the study, beside its invaluable aid in imparting knowledge of location, distance and physical conformation upon the globe to the child,—assists greatly in another respect. It gives him a sense of progress. He sees that he is doing something, that he is accomplishing something, and this every child must be conscious of, to be interested in his studies. Assign him a page of arithmetical definitions and let him memorize, and he loathes the task. He sees little meaning in the words, and still less profit in making them his own. But give him problems to solve, something upon which to exert his power, something producing work, work that has progressive steps and an ultimate result, and he will toil over them with delight. So is it with geography by map-drawing. The lesson of to-day is upon the subject of to-morrow of river basins, mountain systems, climate and natural resources. The pupil collects and groups the facts that pertain to the topic by a natural principle of association, in preparation for the recitation. When the hour arrives, he is called upon to reproduce to the class the knowledge he has gained. Crayon in hand, he must cause a continent in outline to stand out from the surface of the blackboard. To-morrow he traces in chalky meanderings the courses of its rivers, or runs the indented coast lines of its islands, solitary or in groups. The next day the location and extent of its lowlands and plains are indicated by their appropriate coloring, and again by the accumulated and heavier movements of his hand he brings out in bold relief its grand old mountain chains. He accomplishes progressive steps from the beginning to the end. Finding that he can reproduce more to-day than yesterday, and that his handiwork is exactly true to the original, as pictured in his text-book, he feels that he knows more, and is animated and inspired by the

amount and variety of geographical knowledge, and the minute-
and accuracy with which pupils have been able in this manner
hibit it days and even weeks after acquiring it, have been most
ying, and demonstrated most conclusively the decided merit of
ew over the old methods of treating and teaching the study.

Superintendent of Public Schools.—H. L. READ.

CUMMINGTON.

are required, each year, in making school returns to the Secre-
of the Board of Education, to give the estimated amount of
contributed by the districts. This is about five hundred dollars
resent year. Why should not this amount be borne by the tax-
as well as that paid directly for wages instead of throwing it
y upon those who send children to the schools? We believe
attention of our laws is to make the schools wholly free by draw-
their support from the taxable property of the town. The present
n in our small schools makes the burden a heavy one for some
ought not to bear it. One instance the past year: in a district
seventeen families only five patronized the school; and of these
four boarded the teacher. This school was maintained twenty-
weeks and the entire board was with four families. This may be
treme case, but we do not think in the whole town more than
half are called to support our schools in this way. A still stronger
n, if any is needed, is found in the relief given to teachers who
ostly females. The distance they are obliged to travel in stormy
ll as pleasant weather is all we need to add on this point. As
ave adopted the district system again and are to have pruden-
committees, while the present custom of boarding is retained,
should feel it their duty to see that suitable boarding places are
diness for the several teachers. Another duty of prudential
ittees which is often neglected, is that of making arrangements
ilding fires, so that at nine o'clock each day the house is prop-
armed, and the school can commence at once.

School Committee.—LUCIUS C. ROBINSON, THOMAS PORTER.

GRANBY.

notice the remarkable fact, unprecedented in this town we
e, that in the third district—Miss Helen Kellogg, teacher—one
e scholars have not lost a day the past winter, and not a scholar
d a tardy mark during the whole year.
raised last year by taxation nineteen hundred and twenty-five

dollars for our schools, and this would give nearly twelve dollars and fifty cents for each scholar between the ages of five and fifteen. Judging by the educational tables of the State for preceding years, we doubt if this amount is equalled by any strictly farming town in the Commonwealth. The record of past years also shows that the town has graduated at our colleges and higher seminaries a large number of her sons and daughters, a very large per cent. comparatively. Is there, then, a growing indifference to the interests of education among us? The amount of money raised for schools surely does not indicate it,—visitation of them on the part of parents does; as also this fact, that not one of our Granby boys is now in, or fitting for, college, a condition of things, we venture to affirm, that has not hitherto obtained in our history. For this anomalous condition of educational interest among us there will probably be different theories. Some doubtless suppose—or at least indicate it by their action—that when they have voted liberal supplies for the support of the schools, their responsibility ends; that the committee and teachers in the performance of their duties will do the rest, not ever imagining that an occasional visit from them would be a healthy tonic to teacher and scholar, encouraging and stimulating both.

If a circus visits a neighboring town it is sure to draw a larger number of parents (male)—though we hesitate at introducing the parenthetical word—than all the school examinations of the year. What does such a fact speak? that the clown and sports of the ring, athletic performances and pedal dexterity possess more attractions for such parents than the “busy hum,” the mental activity and agility of their children in the school-room? And what of that other fact alluded to, that there is a falling off among us with reference to a higher and more liberal culture? Are the boys and girls among us less promising, intellectually? Do their parents place less value upon a liberal education than did their parents before them? Or is there less pecuniary ability among us to meet the expenses of a collegiate or seminary course? Or what will account in part or wholly for this fact? We believe that the boys and girls have as bright parts; that the pecuniary ability to meet the expense exists, and are, therefore, forced to the conclusion that parents do, as a whole, place less value upon a liberal education than those of preceding generations. In this practical, scheming, money-making age, when the “almighty dollars” have become our common “Penates,” the parent imagines the shortest cut to wealth does not run through academic halls, and the boy catching the same spirit, talks of business rather than books, of counting-rooms rather than colleges.

For the Committee.—S. M. COOK.

HADLEY.

A law was enacted by the last legislature, prescribing drawing as one of the branches to be taught in all the Public Schools of the Commonwealth. The wisdom of such a law seems clear to us. Hence a beginning has been made to put its provisions in practice.

The teachers of the Primary, Mixed and Intermediate Schools, have each been furnished with a set of drawing cards, with a view of giving lessons from them upon the blackboard, which has been done in some instances, with considerable success.

In the two Grammar Schools, Bartholomew's Lessons in Drawing (first book), have been used for a simultaneous lesson of fifteen minutes or more, three times a week, with gratifying results, especially in the Central Grammar School.

We believe that drawing is scarcely less important than writing. They are kindred branches, differing little in respect of ease or difficulty of acquisition, and acquiring one is an aid in acquiring the other.

Although our schools speaking in the general were never better, within our knowledge as we judge, we are aware of defects that are the reason for regret in the minds of all good citizens and call loudly for remedy and improvement.

A chronic and insuperable difficulty is the lack of teachers of the needed stamp. This has been brought to your notice. It will avail little we fear to dwell upon it. We would simply say, however, that we desire, as we are expected, to employ teachers from among ourselves so far as we may. In so doing we must needs take such as are to be had. Some of these are young, without experience or sufficient literary qualification, having no special aptness to teach, nor love for the work, nor training for it. Hence they enter the school-room at great disadvantage to learn how to teach. Some of this class do remarkably well and happily disappoint expectation, while others in these circumstances learn slowly.

There is need of better supervision. This important work must be given to busy men. It has been committed to those who have on them the cares and burdens of an engrossing profession, and who can give to this duty only intervals of time snatched from paramount engagements. It has been our endeavor to give to the schools such attention as is required of us by law, well aware that there is a lack of service that needs to be supplied. If more time could be given in this way, and this oversight be more vigilant and thorough, other things being the same, we might hope that our schools would be bet-

ter than they are. But any great change for the better in would involve the employment of a paid Superintendent, devote the best of his time to this business. But this we gest as a recommendation likely to be complied with in stances.

Another evil in connection with our schools we wish notice strongly, in the hope that something may be done of cure. Allusion was made to this in the last report; w tion to it again. We refer to irregular attendance; the scholars from school at any and all times, in the middle This evil has, perhaps, never been so great as during the Some of this irregular attendance, during the winter esp been due to sickness and of course inevitable. But muc must be accounted for otherwise. It must be laid to th our prime industry,—tobacco growing. Scholars are ke schools in great numbers to help in this business. The school at all seasons, in all weathers, to weed, drop, set, sucker, cut, hang, take down and strip tobacco. No cha be made in the school terms that shall avoid the difficul fact or two by way of illustration. The morning of Mond was damp succeeding a rainy night. On visiting a numbe that day, we had occasion to feel and say greatly to our bacco is king." The register in No. 8 showed that the belonging to the school; we found 15 present; in No. 6, v registered, 18 present; N. Hadley Primary, 61 registered, N. Hadley Intermediate, 54 registered, 29 present; N. Ha mar, 47 registered, 17 present; No. 4, 31 registered, 22 pr 255 registered, 144 present. Let it be marked, that of 47 N. Hadley Grammar School, 17 only were present, 30 abs day, Jan. 16, was another day like the one just named. 8 came under notice. Out of 40 registered in the Central I School, 21 were present; Grammar School, 40 registered, High School, 56 registered, 26 present; total, 136 register ent. Sixty-four absent on that day in these three schools, of them on account of illness. These are samples; rath cases let us hope. The like of this is liable to occur any year. We ask earnest attention to facts like these, the ca of their sure effect in injuring the schools permanently, t through, and not for the day merely. Thus classes are wh up. Some were found without one left out of a large class. of the school is thus sadly let down, the order is broken up study is killed, teachers are worried and disheartened. N such as stay out greatly injured, but those who are in school

greatly likewise. One such day in a school does mischief incalculable; it lasts many days through a term; nay more, it is an injury which admits no repair. Such a fact implies a low esteem of education, tends to educate the minds of all, teachers, parents and children, to the undervaluing of the advantages of instruction which we procure at such cost. Look at the matter and see if this be not a waste of money fearful to contemplate, though this is by no means the worst of the case.

We ask attention to this matter in the confidence that the good sense of the town will see that this is a crying evil that must be remedied. Men whose views are so enlightened as to the value of public instruction, who feel a just pride in our school system, and vote liberal sums of money to support it, will surely be resolved that all shall not be spoiled in such wise as has been indicated. There is indeed something wrong in this course that no gain that may accrue can compensate.

School Committee.—R. AYRES, E. S. DWIGHT, W. H. BRAMAN.

MIDDLEFIELD.

Since the abolition of the district system in town, the improvement of our schools has been more general and permanent. All of our schools have been of nearly equal length, and the best teachers that our town would permit us to procure, have been provided for them, as the wants and demands of each seemed to require. Under the district system, eleven schools were established, four of which have been provided for under the new arrangement, decreasing the aggregate of expense six hundred and sixteen dollars. It continued six years, which is the legal length of schools. Two or three of our schools are yet too small to be profitable, costing the town about the same amount to furnish instruction to nine scholars in one school, as it does to forty in another.

Order is Heaven's first law, so should its importance be estimated in the school-room. And the teacher who maintains it with the most aggregate of corporal infliction, is usually the most successful. The phrase, "Take off your coat, sir," with its usual accompaniment, so often repeated in the school-room during the early part of the last century, is now nearly obsolete; most teachers find other means of securing better results, which are, in general, by appealing to the feelings, rather than to a dread of physical suffering. Kind words have a wondrous power. "A soft answer turneth away wrath, but grievous words stir up anger." Scolding and fretting only make

Instructions were also given in this department in teachers' meetings. As a result in most of the schools the work has been done well, very well. In some, lack of ability or confidence, or an indisposition on the part of the teachers, has caused a great neglect of duty; yet as a whole, the study of drawing has been a success. Its results are seen in improved writing, map-drawing and work of pupils on the slate, board and paper. More correct habits of observation are found. The judgment of pupils has been favorably called into action and disciplined. The eye and hand of each pupil have been trained; a correct idea of form and symmetry called out. Still greater improvement in all these points will be gained the coming year if the superintendent and teachers perform their duty.

Superintendent of Schools.—L. F. WARD.

SOUTH HADLEY.

The prosperity of the school is seriously interfered with by those parents or guardians who, for the sake of a few dollars, keep their children out of school from time to time to do a little work. This is a great evil and your committee are confident that those who have these children in charge would so regard it, did they but give the subject a little consideration. This irregularity of attendance is injurious to the school no less than the scholar. Teachers well know that a check is thereby given to the enthusiasm of their pupils, for this action of parents confirms their children in the opinion to which the youthful mind is only too readily inclined—that attending school is, after all, a matter of small importance. Thus it happens that, when a father says to his son, "You must make good use of your time at school, for learning will be worth a great deal to you when you grow to be a man," and shortly afterwards tells him that he must stay at home the next day, or for a week, perhaps, to help strip tobacco or to saw wood, the boy is not slow to perceive that his father does not really mean what he said about the importance of attending school, and will take example most probably from his practice rather than his precept. So important is this matter of punctual and regular attendance that the marks of absence or tardiness in the columns of the register afford a sure means of judging the prosperity of the school.

In a communication to the committee at the close of the winter, by the principal of the High School, he treats of one subject which can best be stated in his own words: "I would like to speak here of an objection which I have heard raised by several parties, viz.: that our course is too severe, and that we are attempting to force our pupils into too

rapid progress. Speaking not only for myself but for every one in your employ, I can say that nothing is further from our intention. I ask all who hold such ideas to examine our course of study carefully and shall be glad to have it amended if it, or any part of it, is too severe. I can but think that the cause of such complaint lies in some other quarter and has its origin in an evil much too common in our schools much to be deprecated. I refer to irregular attendance. Teachers and parents do not appreciate the ill results of a laxity in this respect. Absence from a single recitation may cause the pupil to fall far along under the disadvantage for weeks. A bright, intelligent boy commences a term full of enthusiasm for study; everything goes on nicely—lessons are easily committed, till in an unfortunate moment comes a temptation for an absence; a visitor arrives, perhaps a party ride is proposed, and the child, with only a child's wisdom, grants an absence. It is thoughtlessly granted, and a day or two is lost to enjoyment. The pupil comes back to find his class advanced, and the principles he has not mastered, and even with all the assistance of the parts of teacher and pupil, double labor is required to make up for the loss, even if it can be done; the child gets tired and discouraged, the lessons seem hard, the zest is all gone. Complaints are made, and the course of study or the teacher is blamed for what was really the parent's fault. I have even known parents take healthy children from school for a week to 'rest them,' not knowing how much work and discouragement they were entailing upon them. It is a mistaken kindness; for, of course, the progress of a class must be stayed for an individual member; and I have never found parents at all willing to have their children submit to the other alternative—that of placing in a lower grade. It has been quite a prevalent custom for parents to allow their boys to absent themselves from school 'strawberry time' for the purpose of earning a few dollars. In many cases where this absence has taken a year from the progress of the pupil, and many where a course of dragging has been caused, it is not better. Is this true economy? The system, too, of intermitting attendance, even allowed by those whose means are ample, has failed; many of our seats being filled in winter by boys who have worked during the summer. With some this is, no doubt, a necessity and regret, but in many cases it is not a necessity. A course would be considered folly in learning a trade or pursuing a business. Is it not greater folly in this case? I am glad to see that some are becoming conscious of this and trust it will soon, the custom of 'boarding round,' be among the things that were."

School Committee.—R. O. DWIGHT, B. C. BRAINARD, N. PRISTON.

SOUTHAMPTON.

Then how many good things have been said about visiting schools, and taking an interest in the studies of our children. What light beams in the eye of a little boy on seeing his mother enter the school-room, and how strong is his determination to have a good lesson that afternoon! What sunshine does her presence shed over happy faces, and what a life is given to every exercise! How loud the boys spell, and what perfect lessons in geography!

Mothers, it pays well to spend an afternoon in the school-room. And how much you can aid in preparing the recitations of your children. Lessons that have been once recited at home, will pass off well at school, and they will be remembered. The ground can be well prepared by the parent, and the teacher will have nothing to do but to cast in the seed.

And the community at large has much responsibility in regard to education. Every one that can speak, or act, helps to give tone to public sentiment, and that in our country is the power behind the throne. Let the value of a good education, and the dangers to our free institutions from ignorance be the theme of frequent discussion in a neighborhood, and soon there will be such a pressure, that avicious parents will be ashamed to keep their children out of school for the sake of their small earnings; and children will feel that going to school is no mere pastime, but serious, earnest work.

School Committee.—RUFUS P. WELLS, ASA NILES, ISAAC PARSONS.

MIDDLESEX COUNTY.

ASHLAND.

A lack of interest in the schools leads to many misunderstandings at home, and to trouble at school. If parents care so little about the education of the children that they rarely visit the schools, the scholars may be pardoned if they think that study is not the most important thing in the world. Examination day comes, but the parents are absent then. One school of over fifty scholars had but six visitors present on examination day, and some other schools were about as well, or poorly, cared for. This feeling in the parents will injure a teacher's usefulness. How can a proper degree of discipline

services of an able and efficient man; this to apply only to those towns throughout the State where there is not a superintendent.

School Committees.—J. W. TURNER, WARREN FROST, M. W. MARSH, HENRY RICHARDSON, HORACE BIRD, GEO. W. WARR, Jr.

BILLERICA.

The improvement in the manners of the pupils, both in and around the school-room, is deserving of special mention. While there is still much to be done in this direction, there is evidently, less of coarseness and roughness to complain of than formerly, and a higher standard of refinement.

This is a part of the school education to which the committee have attached much importance in the employing of teachers, and one they would commend to the attention of all parents and care-takers of children. What is procured in the school from the lessons, while it is the most prominent consideration, is not by any means the only one. The acquiring of the habit of obedience, and of deference to others, must have assigned to it an important place. A school or a teacher lacking in this respect is fundamentally wanting, and there is nothing which concerns the welfare of the schools, in which parents could render aid more directly than in this. There is no cause which cannot be removed, why the reproach of a low standard of refinement should attach to public country schools, and the belief that something has been and is being done in our town to remove this reproach, is cause of congratulation.

More strictly than under the old district system, the school is the care of the whole community, through those who are regularly chosen to have oversight of it. Glad of suggestions these ever are, if rightly filling their place, and ready to consider any requests, but to them belongs the final settlement of all questions touching the fitness or otherwise of teachers, the course of study to be pursued, the discipline of the school, and whatever else concerns it. Interest, sympathy and coöperation on the part of the friends of the pupils are exceedingly desirable and beneficial; but when these are suffered to degenerate into interference and a jealous feeling of individual rights, it becomes one of the most formidable evils with which the teacher of a country school has to contend. Where, as is the case in the country more than in cities and large towns, the teacher is intimately known, and in turn knows the parents, their habits and peculiarities, her situation is one of great difficulty, and demands a large exercise of consideration and charity. The less the interests of separate families, or the opinions or preferences of individuals are either brought

to the teacher's notice, or regarded by her, the better. If the motive is purely to help the teacher, and the way is clearly to do it—except for this, the wisest course is to let her and to regard her as amenable to the committee alone. If all each individual could wish, and does not do exactly as they desire or deem best, she may yet be doing a good work for the school, and may be improving with regard to deficiency, as by some it is deemed.

School Committee.—C. C. HUSSEY, *Chairman*; G. P. ELLIOTT, C. FLETCHER.

BOXBOROUGH.

Every one acknowledges the necessity of good government in a school; the only question is how to accomplish it. Some think it can be done by what they call kindness. We think it cannot. That some children will not learn unless controlled. They must be in subjection to authority; must submit or be willing to submit to a superior will. We do not doubt that most children at a good school may be controlled by kindness; but we think it is a good rule to lay down the rule that force must never be used. The greatest kindness the teacher can do an indolent, idle, wilful, vicious, disobedient scholar, is to bring him by force into subjection, if he cannot otherwise be secured. If corporal punishment is necessary to secure this end, then why should it not be used? Punishment should never be inflicted merely to secure or establish the teacher's authority, but because the teacher's authority is the highest and most rapid advancement of the scholar which he is sent to school.

The parent must remember that in the school-room the teacher has full authority, and the parent must not blame the teacher, if there is no order and good discipline, the teacher resorts to the same measures as the parent uses at home or ought to use. We say ought, because it must not be forgotten that the lack of order and discipline at home makes the duties of the teacher in the school-room burdensome and difficult. The teacher ought to be actuated by the same motives, and the same spirit of forbearance, love and patience, that would influence the kind but conscientious parent at home.

Superintendent.—OLIVER WETTERBEE.

CAMBRIDGE.

The Training School.—This school has been in operation for one year, and may now be said to have passed through

mental stage and settled down to its recognized work as an established part of our educational system.

It was opened in February, 1870, with a very large class of young ladies, and was entrusted to a committee of one from each ward in the city, on a plan whose general outlines only were fixed, and the details of which it was presumed the large and extraordinary committee in charge of the enterprise were empowered to settle as it became clear what was required.

The original plan contemplated the appointment of a principal and assistant; and it was believed that the young ladies of the Training Class would themselves be able to conduct the instruction of the Primary classes in the building, under the general direction of Miss Munroe; while the principal, Mrs. Sullivan, was to be occupied mainly with the young ladies of the class in training. It was supposed at this time that the benefits to be derived from the school would be confined in the main to the Training Class, and that they would receive them from the three sources, of practice in the Primary rooms, instruction in theory and practice by the principal, and from occasional substitution in other schools.

The principal and her assistant, although from the first they doubted the wisdom of some parts of this plan, devoted themselves generously and earnestly to it, and labored with all their might to make the experiment a success. It was found, however, after several months of trial, that the plan was defective. The primary classes could not be managed by the young ladies as was attempted. The scholars understood very quickly the difference between them and permanent teachers, and could not be made to respect their authority. And the frequent changes required, to give every one her due proportion of practice in teaching, seemed to doom the classes to be instructed by teachers in the first and most inexperienced stage. As soon as they acquired a little experience and control of the room, and gave promise of doing well, the turn of another would begin, and the round of experience would have to be repeated.

In addition to the injustice which was thus done to the class, the committee found by careful observation that the young ladies themselves did not improve under this method as they should. It was found that they needed constant supervision. They had no models of instruction before them,—no standards and no ideas,—and required in their practice the continual presence of a competent person to direct them and to form their ideas and habits by her own example.

These results were duly communicated to the board; and at the opening of the present school-year, in September, the committee were able to take a first, and as it has proved a sufficient step toward the

correction of these evils by appointing two additional Primaries,--one for each vacant room.

There has been no trouble since. The appointment of Primaries had the further advantage of enabling the committee of the board to discontinue the one daily session in the Primary of this school, which had been necessary at first, and to bring them in agreement with the hours of the other Primaries.

As the school is now conducted, the young ladies of the Training Class have the advantage of as much actual practice in the school-room as they require; but it is always practice under the supervision of a competent and paid teacher in charge of the room, while they are for the time being. In this way the discipline is perfectly maintained. The young ladies have the model before them, and are not allowed to drill themselves into it.

The principle on which the practice of the Training Class is conducted may therefore be said to be that of practice under competent supervision.

The class are not, however, occupied wholly in such observation in the school-room. They receive daily lessons and practice from the principal. They are carefully instructed in ideas which apply to the management of classes and of a school. They are taught how to observe and how to teach.

Their hours of attendance are wholly in the morning, from 8 to 2 P. M., and in the afternoon the Primary classes are under the undisturbed care of the regular teachers.

The instructions given by Mrs. Sullivan are not of the kind of advanced education, but are designed to give a special qualification for teaching in the Primary Schools. They form a basis of instruction for Grammar-School instruction. But the school is not designed to train a class for Grammar-School instruction, and is designed to qualify for teaching in the Primaries. The instructions given to the class cover the ground of theory and practice, and take up great numbers of examples and illustrations, and of the work actually done; and they are in addition an attempt to instill into the class those habits of mind which are so important in teaching, and to give them, from the study of text-books and from elementary lectures, a kind of knowledge which is required in the school-room.

It was supposed at the opening of the school that the chief auxiliary of the training work would be substitution in the Primaries of the city. The numbers in attendance were sufficiently large, and no harm resulted from the plan.

The school has now, we suppose, settled down to about its normal membership; and the committee find that it is possible there may be much rather than too little substitution. It is evident that this practice, if carried too far, would disorganize the class and defeat the ends of the school. The success of the plan requires that the young ladies should remain substantially undisturbed in their work throughout the year. They should be expected to begin the year with the school and remain to the end, and they should not be permitted to be used as substitutes indiscriminately, or whenever an opportunity offers, but only under regulation, and as their own progress in the Training School and the interest of the school require.

The Benefit to be Expected from the Training School, and the use which should be made of it.—This school, to be as useful as it is hoped that it will be, should not be left merely to train and graduate its usual class. It should be in a sense the Normal School of the city, a model and the instructor especially of all the Primary teachers. It will send forth annually a trained class into our schools, and through them affect very much the whole system of public education. It is designed to do much more than this, and be an important benefit to every instructor in the city. The statute of the Commonwealth requires the teachers to visit other schools. This school is provided as one above all others to be visited. Arrangements are made for such visitation, and it is expected that other teachers will see here examples of what they can do, and models of the way to do it. For the sake of preventing this school from running too much to theory, and losing its practical value and character, it has been kept as it was at first,—no more select than the average. The children come mainly from families which are in no respect above an average condition in life, and what is accomplished with them can certainly be accomplished in any school in the city by any teacher who knows how to do it.

Particularly at the present time, when efforts are making to introduce a freer and more various system of instruction into the Primaries, the value of such a training become conspicuous. In all plans of school improvement we come back at last upon the character and ability of the teachers; and any one who has taken the pains to examine the course of study adopted during the year past, will observe at once how much more is left to the teachers than formerly. We believe that to be the true system which leaves the most to them, which is consistent with order, and holds them to the widest and best responsibility for results. Every step of approach to such a system is new evidence of the importance in the system of such an institution as our Training School.

For the information of the public we would say that this is not designed to be a select school for any who wish to pursue their education, or to qualify themselves for the general work of the city. It is a training department provided by the city for the benefit of those who are unable to receive a common-school education. It is understood that those who derive benefit from it are not to be instructed by instructing in our schools; and it is not considered that the committee are under obligations to receive pupils into it at any number nor at any other times than is likely, in their efforts to promote the objects for which the school was established.

The Drawing School.—At the last session of the legislature an act was passed requiring every city having more than ten thousand inhabitants to make provision for giving free instruction in mechanical drawing to persons over fifteen years of age, in day or evening schools, under the direction of the school committee. In compliance with this Act, the city government early in the year procured a room in Hyde's block, in the second ward, which was at once opened by the committee. Professor Charles F. Johnson, instructor at the Institute of Technology and a practical draftsman, was placed in charge of the school; and in December, Mr. Johnson engaged as his assistant. Ninety persons appeared at the opening of the school; and during the two months of its session one hundred and forty—among them carpenters, machinists, glass-cutters, stereotypers and cabinet-makers—have availed themselves of its privileges.

The average number of scholars has been one hundred and the average attendance about seventy-five per cent. The school has been divided into two classes, each class meeting twice a week. Models, charts, and designs for copying have been furnished by the teachers. Drawing boards and instruments have been purchased by the committee at a cost of about three hundred and fifty dollars. No further outlay for this purpose will be required for several years. When the school is considerably enlarged. Instruction has been given in architectural, machine, and ornamental or free-hand drawing. One-half the pupils study architectural drawing, one-fourth machine drawing and one-fourth ornamental drawing or designing. The school was at the outset an experiment, and from its unpopularity suffered for a time from lack of an assistant instructor. In spite of the room, lights and instruments, the progress already made has given the committee in the belief that the school will prove one of the most useful as well as popular features of our Common-School system.

It is an attempt to provide some intelligent preparation for the prosecution of industrial labor, to teach mechanics and to give them what has been termed the "alphabet" of their education, to

paring to work at the carpenter's bench and the machinist's lathe facilities for study corresponding in some degree to the courses in book-keeping and the modern languages, and in the classics and mathematics, by which their fellows are now trained for the counting-room and the college. The welfare of the State is as dependent on the working men as upon professional men. The skilled mechanic fills no less a place than the educated merchant. Nor can taxation for the training of the one class be supported upon any principles that will apply to both. The limits of this report will not allow us to touch on the many advantages to be derived from the system thus inaugurated by our legislature; but we fully believe with one of the earliest advocates that "whatever brings manual skill again into repute, and counteracts the growing disposition to discredit every means of livelihood that does not consist in 'brain-work' merely, is a positive boon to our civilization."

School Committee.—HAMLIN R. HARDING, *Chairman ex officio*; ANDREW P. PRABODY, ALEXANDER MCKENZIE, HENRY P. WALCOTT, KINSLEY TWINING, JAMES COX, EDWARD ROGSWELL, CHARLES J. MCINTIRE, GEORGE H. MINER, SUMNER B. MASON, JAMES M. ESHER, WILLIAM A. MUNROE, FRANCIS A. FOXCROFT, PHILIP F. AMMIDON.

Training School.—Less than one year has elapsed since the organization of the Training School; so that, had it been in any true sense an experiment, it would now be too soon to speak of results with any degree of positiveness. Still I desire to express, most unequivocally, my opinion that a full acquaintance with the actual work of the school thus far, and a comprehension of the fundamental ideas governing it, would remove the doubts that any one may have entertained at the outset regarding the expediency of establishing such a school in this State.

Certainly the success of the school up to the present time has been more marked than we had any right to expect. The teachers have proved themselves more admirably qualified for their work, and have shown efficiency to every department of the school. Fears have sometimes been expressed lest the children in this school should suffer on account of the multiplicity of instructors. Experience, which is always so much better than mere theory, has already proved such fears to be groundless. The Primary classes are in every respect in the most excellent condition, and are doing thorough and successful work. The testimony of many of the best teachers of other Primary Schools confirms my own opinion that at least some of the classes of the Primary department of the Training School are already furnishing examples of such excellence in Primary-School instruction as to make this school, as was intended, a model Primary School.

BOARD OF EDUCATION.

The Training School is doing just the work that was

Of the young ladies who have thus far been in the school, some have been convinced, as they could have been, that they had not the requisite qualities for the position, and hence have ceased to be applicants for positions in the schools; while others have shown an aptness to teach, and are preparing themselves for the special work for which they are themselves fitted.

We find that thirteen who have been members of the Training School have permanent positions in the city; and that thirteen of Cambridge, who were members of the last class of the

Training School, have received appointments,—thirteen recently elected who had received the benefit of the training. Some of these young ladies are occupying positions, but so far as I am aware, the success of all is satisfactory.

I believe most sincerely that the Training School has put itself to the judgment and sympathies of all who are acquainted with the work it is doing and the place it occupies in the school system.

Evening Schools.—The small expense involved in carrying out evening schools is of little consequence, when compared with the results resulting to the community from the diffusion of intelligence among the ignorant, who are here, as elsewhere, a source of social and political evil. Doubtless the statutes of the Commonwealth will soon recognize Evening Schools as a part of the system of the State; but I cannot forbear expressing the hope that legislation will not then be complete until the law lays the responsibility upon the children of the citizens, and declares that the health and safety of the State demand that they shall be educated. We must have in this country a system of compulsory education that shall be such in reality as well as in name. Ignorance is a direct principle, we have seen, within the last thirty years, has put our nations leaving us far behind. By practically leaving it to the parent to educate his child or not, as he chooses, we have witnessed an increase in all parts of the country with a rapidity that will alarm us. Notice a few facts furnished in the report of the commissioner of education. In 1840 there were 549,850 white persons over twenty years of age who could not read and write. In 1850 this number had increased to 580,000; in 1860 it had become 1,126,575. Adding to this last number the ignorant colored persons also illiterate, and we have the grand total of 2,872,111, or nearly three millions wholly uneducated.

ite. From facts given in this report, it seems evident that the returns for 1870 will show that this evil is still increasing with startling rapidity. What are the facts relating to this State,—a State which boasts so much of its system of Common Schools? In 1840 the number of white persons unable to read and write was 4,448. In 1850 it had become 27,539; and in 1860 it had reached the large number of 46,262. Doubtless the number is now very much larger, and is increasing so rapidly in proportion to the increase of population as to show a much larger per cent. of illiterate persons than at any previous time.

I mention these facts because they seem to me important, and because I believe we are all called upon to use whatever influence we have in securing legislation sufficiently stringent to teach parents that the State has rights which they are bound to respect.

Vocal Music.—Some important changes have recently been made in the department of music in the Primary Schools. Until within a few months, the singing-master was expected to visit the different classes once each week, and personally to give the entire instruction required by the regulations. With the rapid increase in the number of school-rooms, it was found impossible for such a system to continue. In October last, Mr. Lincoln, instructor in this department, addressed a letter to the committee on music, setting forth the difficulties under which he was laboring, and suggesting as a remedy, a plan which was afterwards adopted by your board. This plan is best described in the letter to which I have alluded, and from which I venture to quote a few paragraphs.

"The musical instruction is to be given by the regular teachers, each in her own room; and this to be under the superintendence of the singing master. This is the system which has been followed for several years in the Boston schools; is going into operation this very month in Philadelphia; has been adopted in the Salem schools for the next year; and is the system which will prevail, I think, wherever music is taught in Primary Schools. I have already taken steps in that direction. With the consent of the music committee of 1868, I requested the teachers in the Primary Schools to allow the children to study, during the week, certain exercises which I left on the board. This was entirely voluntary on their part, and I was delighted to see what progress was made. To be sure some teachers did little or nothing; but very many of them never failed to show me their classes, from week to week, perfect in the task assigned. I found—what I had been prepared for by observation among the Boston schools—that some of the teachers whose classes showed most progress in my department were not, by any means, proficient in music; some did

not even sing at all. If you ask me then how they manage, by their wits,—by their native tact or acquired skill and I venture to say that there are from thirty to thirty-five of them who are able to-day to give the musical instruction to the classes in a very respectable manner. Indeed there will be in every building, from one to five who can do this."

The plan, then, briefly stated, is for the regular teacher, under the direction of the singing-master, to give instruction in music in all other branches. It is now too soon to speak of results; I can only say that, so far as I am aware, the teachers are earnestly endeavoring to make the plan a success.

As there are doubtless some who still believe that none but those who are skilled in music can teach successfully, I desire to quote from the Boston school report a paragraph relating to the instruction in music in the lower grades of the Grammar department:—

"According to the report of Mr. Holt, only seven out of one hundred and fifty-one teachers who have come under his observation have proved themselves unable to do their work satisfactorily. Of these seven,' says Mr. Holt, 'three exchange work with others at the time of the music-lesson; one employs a teacher from another school to aid her in this part of her work, who is present at the time of the visit to receive my instructions; while in three rooms the work is imperfectly done. I find that teachers who are regarded as successful in other branches obtain the best results in music. And many of the best teachers are among those who had no idea that they were doing anything in music when we commenced.'"

Such statements ought to give us courage as we enter upon our new system of instruction in this important branch of study. As I do that the measure of success in this, as in other departments of the school-work, is largely dependent upon the tact, the perseverance, and the fidelity of the teacher, I certainly cannot doubt that the results hereafter will be highly satisfactory.

Drawing.—The progress in drawing during the year has been as satisfactory as could reasonably be expected. The full results of the new system will not become evident until the pupils of the lower grades shall have advanced by successive steps through the entire course, and shall thus have shown the degree of proficiency which they have attained by accomplishing the entire work prescribed by the regulations.

I submit, as a matter worthy of consideration, whether it is now expedient to appoint a teacher whose duty shall be to take charge of the drawing in the various schools of the city. If the right person can be secured to superintend the work in this department

no doubt that the results will be much more satisfactory than can be possible under the present system. I do not suggest that the regular teachers be relieved from the instruction of their classes; but I believe that in order to give unity and efficiency to the teaching in this subject, a special instructor is not less needed than in the department of music.

We have complied with the requirements of the law passed by the legislature of 1870, making it the duty of every city and town having more than ten thousand inhabitants to give free instruction in industrial or mechanical drawing.

An Evening School, organized in the month of November to meet this requirement, has been from the first highly successful.

All the important facts relating to this school are before you in the annual report, and need not be repeated here.

Without attempting to discuss the wisdom of engrafting upon our school system this new feature prescribed by the law to which I have alluded, I can only say that it seems to me to be a step in the right direction. We can, even in Massachusetts, learn two things from the study of the Common-School systems of the more advanced nations of Europe. One is the necessity of a system of compulsory education, and the imminent danger to the State from any system which comes short of this; the other is the importance of technical or industrial schools.

These two features united have done so much to prepare Prussia for those marvellous achievements which have recently astonished the civilized world, that one of the greatest of English statesmen has declared that "the victory of Germany over France is the victory of the Common-School system of Prussia over the ignorance of the French Empire."

"There are in Prussia 361 schools devoted to architecture, mining, agriculture, forestry, navigation, commerce, and other technical studies, general and special. Besides schools for weaving and the textile manufactures, there are 265 industrial schools whose studies and hours are directly arranged for the use of mechanics. The provincial and municipal improvement schools, and those for foreman, workman and apprentice, all are fitted with models, tools and laboratories. There are also many drawing schools, in which the classes are arranged to suit various trades needing such instruction. In the weaving schools the pupils receive practical instruction, and also study chemistry as applied to the textile arts," &c.

But Prussia, far from being alone in the matter of industrial education, is even surpassed by some of the neighboring nations. Würzburg, said to possess the best educated population in Europe,

having only 1,700,000 inhabitants, has 130 industrial schools of various kinds, in which there are more than 20,000 pupils.

England, too, is driven to the necessity of establishing a system of education somewhat similar to that of which I have spoken, in order to maintain her supremacy as a manufacturing and commercial power. From 1860 to 1868 the number of industrial schools in Great Britain had increased from 9 to 300; while the number of pupils had increased from 500 in the former year to 15,010 in the latter. I have presented these few facts,—gathered mainly from the report of the Commissioner of education,—not for the purpose of discussing the merits of industrial education among us, but because they seemed to be of interest, and worthy of consideration.

Superintendent of Public Schools.—E. B. HALE.

CHARLESTOWN.

Drawing Schools.—In compliance with a law of the State, passed at the session of the legislature of 1870, a school for instruction in mechanical, or industrial drawing has been established, under the direction of the committee on Evening Schools. A meeting for organization was held on Friday evening, December 16, at the School-house, at which 117 pupils above the age of fifteen years presented themselves for admission; and it was found necessary to divide them into two classes, each of which meets two evenings a week at the High School-house. The present number of pupils is 120, having been accessions each evening that the school has been in session. The committee have engaged the services of Mr. Lunt, who comes highly recommended for his accomplishments as an instructor in drawing. It may perhaps be necessary to establish a third class, and it will undoubtedly become needful to engage an assistant teacher in this branch, as it is found that considerable individual instruction is necessary for progress.

The experience of other cities, as well as the limited experience of this city, leads the board to believe that this class of schools is a decided want which has existed in our Commonwealth, and that the productive of the best results in all respects, though the law which provides for the establishment of such schools, no doubt, contemplates their utility rather than its æsthetic value.

Corporal Punishment.—The committee understand corporal punishment to mean “all inflictions of bodily pain.” But if the reports can be relied on, either the term is understood differently by some of the teachers, or else there has been no other form of punishment administered in our schools but the use of the rod,

ears no record of pinching, shaking, slapping, &c. Perhaps, however, some of these modes, such as slapping on the head, might be more appropriately termed *capital* punishment. But in whatever sense the word may be understood, it remains as the settled opinion of the committee that all inflictions of bodily pain should be avoided when consistent with good order and discipline. By good order and discipline the committee would not be understood as at all approving of that precise and tedious strictness which is so detrimental to the proper relation between master and pupil, as also to the healthy and hearty progress of the school in its studies. It is absurd to require perfect conformity in a class, thus destroying all of the native imagination and force of the individual scholar. All restraint not absolutely necessary, either to the mind or the body, should be avoided.

While the committee would hesitate long before expressing the opinion that corporal punishment should be entirely abolished, they believe its abuse to be far more detrimental than would be its abolition; and unless its administration be restricted to extreme cases of insubordination, public opinion will demand its prohibition by law.

But there are other forms of punishment as objectionable as that of bodily pain. The Scriptures tell us that a tongue can scourge, and a taunting or sneering word may sting more than the tingling rattan, and a teacher that is continually finding fault will soon cause discouragement and derangement of a class of scholars, who, under judicious management, might be zealous and studious.

The committee are aware that much might be said in excuse for a teacher in contracting the habit of fretting, for it is frequently an unconscious habit; they fully realize the strain to which a teacher's patience is often subjected; but they nevertheless desire to call the attention of teachers to the subject, with the hope that the habit may be broken up, if formed, or guarded against if not already contracted. While speaking thus plainly and earnestly to teachers, it is but just to say that, in some cases at least, parents are equally responsible for the excessive use of the rod in our schools.

It will be seen that the committee wish to restrict its use to extreme cases of insubordination, and every one conversant with our schools knows that those cases rarely occur when the home influence is what it should be.

A petulant or thoughtless word reflecting upon the teacher in the presence of a child, is often the cause of such insubordination, and renders the punishment necessary. If the pupil feels that the teacher has lost the confidence of his parents, he is not apt to place himself in an attitude of insubordination.

In behalf of the Board.—WM. H. FINNEY, GEO. W. GARDNER, ABRAM E. CUTLER.

There is a question among teachers of the extent to which a spelling-book should be used, and the class of words which should occupy the chief attention of the pupil.

My own opinion is, that while a spelling-book with words classified may assist pupils in recognizing the general principles already alluded to, a large part of the practice in spelling should be upon words which the pupils are in the habit of using in conversation or meeting with in their reading.

The orthography of words of whose meaning and use they have a conception, will hardly be retained for a long time, but may be acquired when such words become a part of their vocabulary.

Reading.—Reading stands next in the course,—an art in itself sufficiently wonderful, if its commonness had not made us insensible to its value.

But reading gives us a more or less perfect transcript of the mind, according to the degree of perfection to which the art is carried.

A merely tolerable reader will obtain the main ideas of a book, especially where the understanding alone is addressed. But that which constitutes our best literature,—in poetry, and in the choicest specimens of prose,—it is only a cultivated ear and a well-trained voice that can bring out the æsthetic element, the sentiment, the feeling, and at the same time intimate the mental mood of the writer or speaker. In proof of this, I might confidently appeal to one who has heard familiar pieces read by experts in such a manner as to invest them with beauties, which, with their own reading, they had never discovered. We pay the price of an ordinary reader to hear a good elocutionist read a few selections from Hood and Shakspeare, when we have the books containing those selections unread upon the shelves of our own library; or, if not unread, read with greater interest after paying a good reader for the pleasure of hearing them read into them a living soul.

It has seemed to me that we fail, in our schools, to make the most of reading, and to exercise what it might be made.

Of all the branches taught in our Grammar Schools, this is the one which exercises the greatest number of faculties.

Apart, then, from its own value as an art, it is, perhaps, of more educational value than any other school exercise. It calls, when properly taught, more faculties into play than any other. Nothing but a perfect understanding of the author's meaning can secure correct emphasis, force, rate and inflection. The sentiment, if appreciated, must manifest itself in the quality and modulations of the voice.

As a means of general culture, it has no rival. It opens to the pupils the richest treasures of thought and sentiment on all

subjects. A teacher who has command of a good elocution, can, by reading, a more subtle analysis of a choice specimen of prose, a beautiful poem, than can be imparted in any other way.

But, to make the reading exercise what is here claimed for it, every teacher should not only be a good reader, but should understand the principles of elocution. It may not be necessary to teach those principles abstractly, or to say anything of the technical terms employed in the art; but the teacher should be so possessed with those principles that they will be unconsciously recognized by him in all his teaching; and he should be able at all times to give a reason for the emphasis, quality of tone, the rate, pitch, &c., with which he reads a passage. No one would be considered qualified to teach music because he sang or played well by rote, if he knew nothing of the science of music; nor should one undertake to teach reading without making himself acquainted with the principles of elocution.

Much of the early instruction in this branch is necessarily mechanical and imitative. The ear must be cultivated to an appreciation of the elements of expression, and the voice to their utterance.

When this is done, by systematic practice in articulation, inflection, stress, &c., in the lower classes, it is not too much to expect that, in higher classes, the reading exercise may be made to convey much information on important subjects, to create and strengthen a literary taste,—in short, to become an efficient means of general culture.

Grammar.—Grammar, too, is found among the recognized studies in all our New England schools, and has even given the name to what is perhaps considered the most important grade of schools.

And yet it may be doubted whether, as generally taught, it is of much practical value. If it is merely a critical art, designed to enable one to detect errors in what somebody else has written, perhaps the common mode of teaching it is as good as any. But if, as the books say, it is "the art of speaking and writing correctly," then, committing the text-book to memory, and learning to analyze and parse, and correct false syntax, do not teach the art.

In teaching any art, three things are required,—a knowledge of principles, an examination of models, and systematic and abundant practice. A text-book, in the hands of a judicious teacher, may assist in teaching a knowledge of principles.

Analysis and parsing, or the examination of models, will show the application of these principles; but systematic and abundant practice alone will secure the power of "speaking and writing correctly." The great error that we have committed in teaching grammar is, undervaluing, or wholly omitting, practice in writing.

What proportion of the time now allotted to grammar schools is spent in composition? I think at least half might be devoted to it without detriment to the exercises in reading and parsing. How does the carpenter learn his trade? By studying the working plan of the architect, and committing to memory the names of the several parts, and the manner in which they are put together. He must do what he wishes to learn. "I cannot know of the doctrine," says the great Teacher, "if ye do not know of the thing; is true in all things. We learn to read by reading; to sing by singing; to paint by using the brush. We learn a trade by doing it; of course under proper guidance, and subject to criticism. What is done poorly at first, may be improved upon. We have seen the folly of the man who resolved never to go into the water, because he had learned to swim. Let us beware lest

"Like that strange missile that the Australian throws,
Our verbal boomerang slaps us on the nose."

Drawing.—Drawing has pushed its way into the course of our studies.

The instincts of childhood, which could not be whipped down, compelling the pupil to make pictures on his slate, came gradually to be "endured," perhaps not without a touch of pity, and is now "braced." Is this the insidious approach of vice, or is it a proof that the instincts of childhood may be wiser than the judgment of manhood?

Is it not possible that some other restless activity of youth, which now subjects the offender to punishment, may hereafter be in the same category? "Take heed that ye offend not these little ones."

Superintendent of Public Schools.—B. F. TWEED.

CONCORD.

Until recently, the words, "make a detailed report of the condition of the several Public Schools," have been naturally interpreted to prescribe that the annual report should contain an account of the virtues, and the short-comings too, of each teacher, in each and every term of the year, and in respect to each branch of study and discipline. As a result, if a young man from college, perhaps, with no experience whatever in teaching, as he naturally might do, to secure the best order, that fact was put in print before the eyes of all tax-payers at the March meeting. If a young lady equally inexperienced, did not prove to

fit for imparting knowledge, or was unable to maintain as thorough discipline as is desirable, and as it is proper to require, then she must look forward with dread and shame to the time when she should be set in the pillory of an annual report. The prospect of being called upon to make such a report was alone enough to keep a humane man out of the school committee. And the shifts to which humane men have been reduced, that they might say a thing and yet not say it, that they might tell the whole truth and hint at all deficiencies, and still to do it so as not to hurt the feelings of worthy people, whose only fault was that Providence did not call them to adorn the vocation of teaching, would be ludicrous if they were not so sober.

But latterly a wiser interpretation has begun to prevail. It has come to be seen,—and wonderful it is that it was not seen before,—that if a teacher is good enough to keep, it is simply absurd to tell of his or her smaller errors and imperfections to a whole town; and that if you dismiss teachers, that it is useless cruelty to make public for no good purpose all their mistakes. What the committee are in detail are such facts, hints, suggestions and needs as shall in their opinion promote the best interests of the schools:—by awakening more popular enthusiasm, by calling the attention of parents to their own duty, by defining the proper work and office of the school and teacher, by presenting to the town the pressing wants of the schools. Your committee have dwelt at such length on this point, because some remarks have been made concerning the omission in the reports of the last year or two of personal details. That omission was of no great purpose. And your committee hope that in the future no personal allusions will be made, unless indeed at the close of a long term of service it be thought fitting to render proper acknowledgment for real and distinguished success.

The school-houses of Concord are all in a comparative sense new buildings; that is, they have all been built within less than twenty years. Without being in any sense elegant structures, built without regard to cost, they are on the whole well adapted to their purpose. Modest and unpretending in their exterior, with good yards for playgrounds, light and roomy in the interior, they are as good buildings as we could expect to get. There is, in fine, no marked objection to their original plan and construction. But your committee would respectfully suggest that there is a very great difficulty in respect to the care and repair of school buildings. The trouble is this: the persons who by position ought to know about the condition of these buildings, and who in fact do know, the school committee, have no charge whatever of them. While the body which is overburdened with the care of the general interests of the town, its roads, its bridges, its engines,

its finances, and which rarely enters our schools, has en- buildings and repairs. Except by the courtesy of the school committee cannot have a square of glass set, a blind-fast replaced, or a door-lock repaired, or a stove do not speak in the way of complaint of the selectmen. farthest from our purpose. For we have had abundant forbearance from all boards of selectmen. We speak method. And we say unhesitatingly that it is a bad schools are not thoroughly and systematically kept in result, you go into our schools, you find them full of called minor dilapidations: here and there pieces of pla a seat broken, a blackboard crumbling and nearly un blind dropping to pieces, a fence leaning all ways, possi two broken. Your committee can think of various me ing for the school-houses far better than the one now p town can in the first place, while leaving the busine where it now is, in the hands of the selectmen, direc school-house, so far as the minor repairs are concerned, in complete order every year in the long summer vaca quire the selectmen and school committee to establish a for the larger repairs, such as outside and inside painti as often as once in five or six years, every school-house, possible, shall be put in as good condition as when Again, our town can do as some others have done, p charge of the repairs of school-houses in the hands o committee, and place a specific sum in their hands with the work. Or, yet again, the town can appoint a mixed from each board, and commit a definite sum to this b authority to act. Your committee propose to bring this tion before the town, for they have a firm conviction matter of repairs of school buildings there must be more more thoroughness, and more system, else before we th stead of having eleven trim, good-looking, well-to-do l shall have eleven old, dilapidated school-houses. That ing it strongly. But we want to state it strongly enough town to think a little.

If your child is really ever driven, then we say that you put him into one of three classes, and that the remedy is in your hands, and not in the hands of the committee. First, the child is driven for one reason or another, from its own ambition, or from your ambition, or from some other cause, and it has taken his place in a class where members are on an average three years older than he. And now that the studies are

maturity of mind, he can pursue them only by too great strain on the mental faculties. The remedy is for you to take the child out of school for a year, or to permit him to drop a class in rank, not for children of thirteen to wait for one of ten to grow up to them. Or, second, your child is a child of a good, fair, average mind. He is not remarkably quick in anything, but he desires or you desire for him that he should take what his Maker never intended that he should take, the first rank in scholarship. To do this he studies a fabulous number of hours out of school, and perils health and life. The remedy here is, let the boy or girl honestly and earnestly study the number of hours consistent with preservation of good health, then let them stand where they may, at the head or well down in their class. That the place given them to fill, and filling it, they will be ten times as likely to become strong, useful men and women, as if you began by wearing out their brains and by breaking down their bodies. Third, your child may for one cause or another be in poor health. It is a great misfortune. But the child is not responsible for it, you are not responsible for it, and the schools are not responsible for it. It is a great misfortune. But what shall be done about it? Shall fifteen or twenty healthy boys and girls be kept at half-pace to accommodate one in poor health? Would that be wise? Would that be just? The remedy is in the parent's hands alone. Let his child come to school as an invalid and learn such branches as he can. In other words, let him do the best he can under circumstances that one would hardly alter if they could.

School Committee.—G. REYNOLDS, *Chairman*; D. G. LANG, *Secretary*.

EVERETT.

Reading and Spelling.—Reading, in its most cultivated state, is one of the highest and most desirable attainments in scholarship. It is the chief means of acquiring knowledge. To speak the English language with accuracy, to spell its words and understand their meaning, and to write it so as to express our thoughts with clearness, are accomplishments of the highest value. To attain to excellence in reading requires much careful practice. It is more a practice than a study, and should receive a large share of attention through the entire course of school education. This valuable art has been appreciated in all ages of the world. On this subject Nehemiah (ch. 8, v. 8) makes use of the following language :—

“So they read in the book in the law of God distinctly, and gave meaning, and caused them to understand the reading.”

Read distinctly, give the sense, and cause the hearers to understand the reading. Here is a comprehensive rule for good reading which we hope will be observed in all the schools.

School Committee.—JAMES G. FOSTER, *Chairman*; CHARLES F. ATWATER, G. S. MARSHALL, J. H. WHITMAN, H. M. CURRIER, J. F. WAKEFIELD.

HOLLISTON.

Let parents remember that they are under weighty obligations which are not discharged till every child enjoys the benefit of school privileges. Children have a right to demand of their parents an intellectual culture, equal to the demands of either a business or professional life. The expense of sending your children to common or even High School, is so trifling, that no one can properly object. You must board and clothe them, whatever they do, and the law will tax you the same, whether you send them to school or not.

Remember it is a great wrong to a child, without good cause, to deprive him of regular attendance. Many parents allow their children to remain out of school to play, run of errands or perform menial labor. We would encourage you in teaching the principles of diligence and self-reliance to your children, but we do think the habit of sending them from school to labor, under ordinary circumstances, is a serious fault. You had better apply yourselves the more to your work, economize the more closely, and struggle with poverty, rather than deprive your offspring of a respectable education.

Take good care of the health of the scholars. During the year the parents place in your hands the physical well-being of the children. An injury or exposure may be received which will result in inconvenience and suffering through life. Careful scientific investigation by medical men in different countries clearly shows that the foundation of many diseases is laid in the school-room. We agree with Dr. R. Vinchow of Berlin, Prussia, that "this is one of the gravest importance to the future of our nation, demanding more attention than has hitherto been devoted to it." We would say: "Too exclusive care has perhaps in many cases been given to the mental development of the young, frequently overlooking the youthful mind, the truth of the old adage, 'a sound mind in a sound body' being forgotten." It is true, that many of the defects contracted in the school-room may be outgrown or cured, but it suggests that a little caution is the best cure. It has been remarked by an eminent physician, that "The prevention of disease is of greater consequence for the full enjoyment of health than the cure of it."

ing of them." It may not be amiss to mention some of the chief dangers, as they are given by an author already quoted: 1. "The staled air, by reason of so many children being in one room. 2. Frequent colds produced by the change from the hot school-room to cold air. 3. Dust in the school-room. 4. Impaired respiratory movements produced by continued sitting." These brief statements show that great care should be taken to preserve scholars in the enjoyment of perfect health. There will doubtless be exposures beyond our control, but a faithful discharge of duty will secure a good science.

School Committee.—E. F. WHITING, D. W. FREEMAN, W. J. HANBLETON.

HOPKINTON.

Absence.—Judging from the actions of many parents, it would appear that they do not clearly comprehend what is necessary for a scholar that he may succeed in his various studies; but think that the absence of their children from the school-room one or two days, or parts of days in each week, cannot interfere with their studies, as they can make it up—being smart, as their fond parents think—the next week. If they would apply the same practice to their own business, the result would teach them that time was a necessary element in the success of the business relations of life. Suppose the mechanic should be absent from his labor one or two days, or parts of days, in each week, would not pay-day convince him that absence from labor was a serious evil? And what time is to the mechanic and business man, that is to the scholar. The absence of a pupil from a single recitation is not only an injury to him, but to the whole class of which he is a member. Therefore, the parent that takes his child from school, just to carry father's dinner, not only injures his own child, but robs the school of that which he can never repay.

There is a law in Saxony and Prussia making the absence of a scholar, of proper school-age, for ten continuous days, *prima facie* evidence of fault on the part of the parents or guardians, and subjects them to a fine, only to be remitted on satisfactory explanation, under certain conditions.

A law like that, perhaps, would be severe for a country like ours, but it would, in many instances, be productive of good results in preventing avaricious parents from filling their pockets by robbing their children and letting them grow up in ignorance,—the chief source of crime, poverty and degradation.

Drawing.—At the last session of the legislature of Massachusetts, an Act was passed, which makes drawing a required study in all our

Public Schools. The committee did not deem it advisable to introduce drawing in our schools the past year, as the first term commenced before the law was passed; but we think measures should be taken for its introduction as soon as possible.

Drawing is not only an accomplishment, but useful in every branch of civil society. It is the foundation of painting, and of great utility to the sculptor, the architect, the engraver, and the engineer. There is no branch of the mechanical art, which is more dependent on the art of drawing, from the builder of a locomotive engine to the designer of a lady's hat.

To be able, at any time, to make a sketch of a fine building, a beautiful landscape, or any curious production of nature or of art, is not only desirable, but in the highest degree useful and entertaining.

The same faculties of the mind and the same physical powers of the body are called into action in learning to draw as in learning to write; and no one is born a draughtsman more than he is a writer.

For the Committee.—C. MERRILL.

HUDSON.

We have good reason to believe that, in some instances, parents have not only been neglectful in respect to irregular attendance, but have lent it their sanction and countenance, by rendering excuses for the teacher for the absence and tardiness of their children, when there was no good reason why they should not have been present in their places. If perchance the skating was good, or there was a fair to be held, or handbills to be distributed, for which a few pennies might be made, or buy toys or confectionery, or a circus or puppet show come to town, it seems to some parents to be a sufficient reason why a leave of absence should be granted. Let those parents remember that habits of idleness and irregularity soon become permanently fixed. Let them remember that absence from or irregularity of attendance at school of business would not be tolerated by good business men. Let every employé of any kind would soon be discharged for such conduct. We think that it would be at least as great an error to neglect attendance at school.

School Committee.—J. L. HARRISMAN, WM. S. HETWOOD, GEO. S. RAY.

LEXINGTON.

The number of pupils who enter the High School is sufficiently large, considering the population of the place; but it is to be regretted that so many are willing to leave at any time.

se, thus depriving themselves of their only remaining opportunity study, and at the same time breaking up their class, which in some instances is reduced from fifteen or more to two or three. Any school suffer from such a disintegrating process as this. The hearty interest which the members of a class naturally feel in one another is destroyed, the studies become less attractive, and the *esprit du corps* is broken.

The evil is not peculiar to this town. All New England and America suffer from the same cause. Much of the superficial knowledge with which, as a people, we are justly charged, is owing to that restless impatience of school life, and that unwillingness to keep the mind upon any subject long enough to master it, which characterize the best of our literary institutions.

The haste to find manual employment or an eligible mercantile position has led many a young man to regret, when it was too late, that he had not properly qualified himself, by mental discipline and thorough knowledge, for the position to which he aspired. Let the mind be applied where it belongs; and let our promising and ambitious youth strive, even with personal sacrifice, if need be, to furnish themselves with that broad and liberal culture which the age increasingly demands.

Intimately connected with this is the attitude and bearing of the child in school. We often see children sitting lazily at their desks, as if they did not know what to do with their limbs, and when called to rise, standing in an awkward, listless, inattentive manner. All this can be remedied by proper attention and drill. Even the most promising cases will soon yield to careful training, and when a new and better standard of manners has been fairly established, the scholars will take pride in conforming to it. And something more than a respectable appearance will be gained by this; an improved state of health will also be seen.

It is no small matter to secure a good physical development, and it is well known that the foundation for many a disease is laid at school through the neglect of proper rules of health. Children should be taught that an erect position, whether in sitting, standing or walking, is necessary to a free and vigorous expansion of the lungs, and that teachers should always attend scrupulously to the matter of ventilation. Much of the dulness of school children is owing to the impure air in which they are obliged to breathe. And it ought not to be beneath the attention of any teacher to give his pupils (whether they have a school-book on the subject or not) sound advice concerning such non-place matters as dress, diet, sleep, cleanliness, &c.

School Committee.—EDWARD G. PORTER, CHARLES TIDD, JONAS GAMMEL.

LINCOLN.

The advantages of a thorough drill in our schools entirely in the acquaintance made with branches of which knowledge is manifest in the common interior in the discipline of the faculties of the mind; but thirst for knowledge, and a love of reading, and thus and habits of mind which greatly shape the future career. The activity and discipline given to the mental powers, satisfaction in continuing, to some extent at least, the position already made. The intervals of leisure, so often spent in frivolity or vicious amusements, will be devoted to books.

The fact that a very large majority of our scholars are in other school advantages than those our own schools afford is a consideration which should stimulate the citizens to make such arrangements as great as possible. The committee bear testimony that the town has cheerfully responded to the calls for appropriations.

School Committee.—HENRY J. RICHARDSON, WILLIAM FOSTER, JAMES FARRAR, WILLIAM MACKINTOSH, SAMUEL HARTWELL.

LITTLETON.

We are glad to report a gradual improvement in instruction in most of the branches, and in none of them more desirable than in reading; a branch which is the chief means of acquiring knowledge, but, in its most common use, one of the highest and most desirable attainments in life.

In teaching geography, too much reliance is placed on rote. It is a matter of mere memory with many pupils, and not, say, with some teachers? How much it disciplines the mind, to commit lesson after lesson for the purpose of simply reciting to the teacher, is a question about which there ought to be some difference of opinion. We know the practice is disgusting to many, and it teaches them very little that is of any practical use. In this branch, we are happy to say that much attention has been given to map-drawing. In some of our schools the maps, in their execution, have been very excellent, doing the pupils great credit, and good taste in execution. They never fail to be interesting exercises, and the knowledge thus obtained is far more permanent than that obtained by any other method.

Chairman.—HENRY T. TAYLOR. *Sec'y.*—PETER C. EDWARDS.

LOWELL.

The subject of school architecture has of late years received much attention, and has to some extent seemed to be a matter of rivalry among the cities of this part of the country. In many places a few exceptionally fine buildings have been erected, the great and unnecessary cost of which has been made the excuse for leaving many of the other schools to toil along in very unfit school-houses. Something like an equality of accommodations should be aimed at. Every school should be provided with dry and spacious yards, surrounding a neat, tasteful edifice, which should have in all its rooms wide areas and passage-ways, a liberal amount of light and sunshine, and should be evenly warmed and ventilated. These are essential requirements. Without them all to the full extent, no school-house, however costly, is a good one, and with them no house can be essentially bad.

The problem seems to be to combine the good qualities of a school-house in a style of building so cheap that all the schools can be provided for in a similar manner. The city of Worcester is attempting to solve it by providing each of her districts with a school-house, embracing the modern improvements and accommodating from four hundred and fifty to five hundred pupils, at a cost not exceeding \$30,000 each, excluding land. If such a house can be built without sacrificing anything of educational importance, and \$30,000 be saved the cost of another house of no greater capacity and no better as to light, air, warmth or space, it would seem to be the true policy to select the cheaper style, though depriving the city of an ornament and a building for exhibition to strangers. The \$30,000 so saved, if invested, will earn interest enough to pay the salary of a master for the school forever, an endowment much to be preferred to architectural display, however excellent.

One highly important point in a teacher is an intention to teach for a long term of years. Frequent changes, inexperience succeeding experience, have produced much mischief in our schools, and a Primary teacher's certificate has been too often regarded merely as a short and convenient bridge, connecting the High School diploma with the marriage certificate. We by no means expect teachers on entering our service to dismiss all expectations of an eventual domestic settlement, but we do desire that those who put their hand to our educational plough should not look back until they have performed a fair share of labor. To secure this degree of permanency, reasonable salaries must be paid. Our teachers, to be what they ought, must feel that by faithful, steady service they are making a reasonable pro

vision for after life. Then will more thorough preparation for the work, and the calling come to rank as a profession. Women spend two years in a State Normal School, fitting for teaching, they have a right to expect a higher remuneration than those who have never given a single day to such preparation. It is economy to give it to them. Poorly paid or even untrained apprentices are not often profitable help, while faithful and accomplished journeymen are always cheap at high pay. Teachers are decidedly no exception to the general rule, and find their own experience as valuable in their laborers, as does any other of the sun.

During the last year, the legislature has passed a law ordering drawing to be taught in all the Public Schools of the State, and ordering all towns of more than ten thousand inhabitants to make an annual provision for free instruction in industrial or mechanical drawing to persons over fifteen years of age, in day or evening, under the direction of the school committee. In obedience to this salutary law we have caused drawing to be introduced as a new branch in all our schools, and have put it under the temporary supervision of the teacher of writing. The schools for adults have not yet been organized, but probably will be as soon as a system of action shall be agreed upon for the principal cities of the State. We think a special teacher of drawing, to educate the other teachers, and to superintend their work, should be employed for the next year, at least.

The importance of drawing, as a branch of public instruction, has been recognized in the manufacturing countries of Europe for a long time, which fact has given them great advantage in the world. Sixty years ago, the *great* Napoleon caused drawing to become a prominent study in the schools of France; the success of that country in decorative and ornamental production is the result, bringing immense wealth to its shores from our own paying no small part.

In Germany, the teaching of drawing has been universal in all the schools. A teacher who could not draw and teach drawing would sooner be employed in one of her schools than one who could not learn to read and write. This training shows itself in the skill and accuracy of the German soldier, and it adds value to the German mechanics, enabling them, in some of our country, to get from fifty cents to a dollar a day more than those of equal merit in other respects.

At the World's Exhibition, in London, in 1851, with its manufactures requiring artistic skill, England stood low

ing the countries represented, and the United States stood lowest of all. The educators of England, aided by the manufacturers, immediately caused drawing and artistic schools to be established in all the towns of the kingdom, for the training of her workmen and women. The result was that at the Paris Exhibition, sixteen years later, England advanced from next to the foot to the first place on the list. Is mortification any adequate name for the feeling with which we learn that the United States continued to stand complacently at the foot?

Numerous attempts to introduce drawing as a regular school exercise in this country, have failed. Rembrandt Peale had two great ends in view,—to paint a Washington that should go down to posterity, the other, to devise such a course of lessons in the art of drawing that young boys and girls should learn it as universally as they learn reading and writing. He accomplished the first, and to the second devoted the labor of many years, which he embodied in the form of a little manual for school use. Several educational gentlemen in Philadelphia exerted themselves, for a long time, to procure the adoption of this manual as a part of the regular school course of that city, but in time were obliged to yield to prejudice and abandon the field. Last year, Hon. Henry Barnard, then United States Commissioner of Education, said in his report:—"The government of the United States is the only civilized government of the world that has done practically nothing for the encouragement of art, either in its elementary or higher forms. The State and municipal governments have done, if possible, less."

Change has commenced, the educators of the country having labored in all directions. Cincinnati employs six public drawing teachers, at an expense of \$5,700. New York, San Francisco, Philadelphia, Brooklyn and Chicago have made this branch a part of their school instruction in all grades, and now our old Commonwealth has introduced it by law into all her five thousand Public Schools.

We may expect results at least equal to those reached in England, and may have a reasonable hope that sixteen years hence we shall have disappeared from our accustomed place at the foot of the list. We speak of drawing only as applied to training the hand and eye for industrial purposes, for that is, we think, its valuable feature as a branch of public education.

Drawing is the written language of the eye, even as words are the written language of the brain. It is especially the language of the mechanic art. Constant difficulty is experienced for want of workmen who can even read this language—that is, who can work from a drawing or plan without constant explanations, which machinists say

is the cause of no small loss in dollars and cents to both the individual and employed, and consequently to the community at large. Therefore from this point of view that public educators are called to regard the subject, leaving higher walks of art to be considered in future years.

The Drawing Schools for adults can best, we think, be connected with our free Evening Schools. Of this latter class we have one in operation, conducted by thirty-three teachers and eight hundred and seventy-nine pupils. These schools can be made larger to great advantage. They are attended by a very large class of pupils, and are doing an admirable work. The industry with which instruction is sought by nearly every attendant, the earnestness with which ideas are grasped, and the perseverance and fullness shown by full-grown men and women in search of knowledge of which they were deprived in childhood, give them a new idea of the value of these schools. The young men assembled can in no other manner be subjected to the same influences, as to manners and morals, during their spare time, while even the rudiments of education are accessible to them in no other practicable way. They show our schools the correctness of their deportment and their anxiety to receive a little information, show their hunger and thirst for knowledge. Shall we hesitate to provide for every one who will come? Shall we expand our Evening Schools until all who knock at the door? Shall the cry for light of one of these souls be unheeded? Shall for the bread of knowledge be answered with a stone?

Chairman of Committee on Report.—JOHN A. GOODWIN.

Truancy and Absence.—The attendance in the schools this year has not been quite as good as last, owing probably to the excessive heat of the summer term. The duties, however, of the truant commissioner, Jesse Huse, Esq., have been as faithfully and promptly discharged as ever. From his report, I extract the following statistics:—

Number of orders from superintendent's office,	.	.	.
" received from teachers and parents,	.	.	.
Total,	.	.	.
Of the above there were truants,	.	.	.
" " " " absentees,	.	.	.
Children who had never been members of any city school, or new			

Many of the new scholars were French who would not have gone voluntarily, but who, when placed in school, soon made commendable progress both in speaking the English language and acquiring the elements of an education.

Number arrested during the term,	85
Carried before the court,	26
Sentenced to the Reform School,	17
Paroled and returned to school,	9
Placed on probation without going before the court,	9
Cases of misdemeanors investigated on complaint of teachers,	26
Returned to school the second time,	102
“ “ “ “ third time,	54

Mr. Huse closes his report as follows: “I have found but few cases of long-continued truancy, many of those reported to me as truants returning to school on learning that notice had been sent to me of their delinquency. I still consider unnecessary absence the great evil of our schools, and the hardest to remedy. When it is absolutely necessary, on account of sickness or any other cause, it is excusable. But where parents allow their children to stay at home for trivial causes, and cannot be made to see the difference between constant attendance and frequent absence, it becomes an evil not easily remedied. If all the absences reported by teachers could be traced to real delinquents, it would be found to be confined to a few, and as two or three in each room spoil the average of the whole school.”

Superintendent of Public Schools.—CHARLES MORRILL.

MARLBOROUGH.

The High School should be an institution meeting the high educational wants of the community. These wants are determined by the natural ability and prospective occupation of the pupils. It will be of no service to enter here upon the discussion of the vexed question of the comparative advantages of the study of the classics or the sciences as a mental discipline. Both have great claims upon the attention. That we should have a classical course, where our young men can fit for college, and our young ladies for the higher seminaries of learning, few will deny. The real question is, whether all, without regard to abilities or prospects in life, should be obliged to give a part of their time (which is in many cases very short) to the study of a dead language (which they cannot pursue far enough to be either a source of enjoyment or culture), or be left to give their undivided

time and energy to those studies which tend directly to fit for active work in life.

The High School should meet the wants alike of those who go forward to a long course of training and culture, and those who have but a short time to give to the furnishing of their minds. It should point in one direction to a life of contemplation and study, and it should also point in another to the occupations of business life. If it leads to the college, it should also lead to the technical school. It should be the friend of all,—the helper not only of him who goes into the wide fields of culture, but of him who is fitting himself for the wide fields of business. We should have a classical and an English course; and a choice should be carefully made by the parents between the two. We should have a course which should be once rigid, and up to the standard of a first-class High School, and at the same time, one which will bend, not to caprice, but to the wants of the community.

Truancy is another and still harder question which we must meet, and from its prevalence demands the attention and the exertions and coöperation of all our people. A casual observer who walks our streets will find evidences everywhere, that either the schools are not in session, or that large numbers of children are out of school. The laws on this subject are like laws on every subject, useless, unless supported by an active public sentiment.

There is still another cause which operates as a hindrance to the efficiency of our schools; but it has, at least, a plausible excuse. Here, too, the interest of society and the good of the individual may be vindicated. Many children are every month discharged from school to go into the shops. It is sad to think of dwarfed and crippled bodies which must inevitably result from the apparent necessity that our children should be obliged to contribute of their strength to the support of the family. The rights of the intellectual nature must, however, be carefully guarded. It is very difficult, at present, to ascertain whether these children have been at school during the months which the law requires. We should, on this point, have stringent regulations. A discharge-ticket, signed by the teacher and chairman of the school committee, should be required by every manufacturer before a child could get employment or draw pay. There would be no trouble about the enforcement of such a regulation; the manufacturers would without doubt, one and all, be glad to have the subject vigorously in hand.

The number of children employed in our shops warrants the introduction of a new feature into our school system,—a factory or time school. In several manufacturing towns this has been done.

good results. Some account of these schools may be found in H. K. Oliver's Reports, Senate Doc. No. 44, 1869, and Senate No. 120, 1870.

The method and working of the school may be easily inferred from the following extract, which is taken from the report of Mr. E. A. Board, superintendent of Public Schools for the city of Springfield, the year 1869:—

The 'half-time' school at Indian Orchard was opened a year ago for the benefit of those children who worked in the mills, and who could not work for their own support. How, then, could they obtain the education necessary for themselves, and required by law? To meet the demand for education and for a support, the Indian Orchard Mills Company send about thirty children from their mills into school three hours a day. * * * These children have made good progress; I think, learned more than half as much as they would in an ordinary school; and therefore I think the six months in a half-time school is more than an equivalent for the three months formerly required in an all-day school. I had hoped that, before this, we should be able to have the half-time school continue all day; that is, to have one set of children out of the mills in the forenoon, another in the afternoon; and I still think we shall attain to it."

To this we add the opinion and experience of Mr. C. J. Goodwin, manager of the mills, in a letter to Mr. Edward Atkinson:—

The scholars leave work at twelve o'clock; school commencing at one o'clock, and closing at four, with fifteen minutes' recess each session.

* * * The parents of the children attending school are well pleased with the arrangement. I have not had a case of truancy reported to me: this shows that the children like and appreciate the arrangement. * * * I cannot as yet compare the earnings on job-work; but I find that, where the children were before losing from one to two dollars a month, they are now working full time during the hours formerly devoted to labor, the school-hours being a real rest to them. I am studying the working of this school with interest; and, while I do not wish to arrive at a conclusion hastily, I fully believe that the half-time system is practicable; and, wherever adopted, the manufacturer and the operator will derive a benefit from it."

School Committee.—W. D. BURDETT, S. N. ALDRICH, CALVIN STEBBINS.

MELROSE.

School Superintendent.—The most imperfect part of our whole system of education is the supervision. The experience of every community is that schools need such oversight and guidance as can seldom

be given. Proper classification of pupils, suitable program and practical results, can only be attained by the action of some superintending authority. Without such influence, even good teachers become listless and indifferently negligent.

But such supervision requires a man properly qualified and paid. How can towns like Melrose, heavily taxed as they are, afford such a luxury? The solution of the problem will come when we realize that three hours in the school-room is sufficient and that teachers could, therefore, instruct, in the true term, twice the present number of pupils. Two thousand could be saved annually, if so many were not anxious to send their children, regarding schools as a public nursery. If the customary hours were maintained, twice the present number of pupils, during one-half of the day, could be taught music, drawing, or listen to instructive lectures, saving, at least, the salary in four. Our annual appropriation is sufficient, without radical changes in our system, to have our schools resemble a well-organized factory, every workman in his place, and the full amount of work being done.

School Committee.—CHAS. H. ISBURN, W. H. ALLEN, F. P. WOODBURY.

NATICK.

The second term commenced the first week in September and continued until the week before Christmas. During this term we held the Teachers' Institute, which was held this year in this town at the request of your committee. We hoped by this means to draw public attention to the schools, and to create a new interest in the people of education, as well as to awaken a new zeal in the teachers. We therefore suspended the schools during the term of the Institute, and required the teachers to attend its sessions. They very gladly did, with manifest advantage to themselves and to their schools. The good people of this town, with the exception of which they are always wont to extend on such occasions, opened their doors and freely entertained the large number of teachers who attended, and we believe a new impulse in the right direction was given to our schools. Our teachers, as well as the community, were encouraged to go forward with new energy in the work of the system of public instruction in this town, by the interest manifested by our citizens on this occasion. The instruction in the various branches and means of teaching, given by the able and accomplished lecturers who had charge of this Institute, and the public lectures

in connection with it, were all duly appreciated by the people of town, and have undoubtedly influenced public sentiment in relation to matters of education in very many ways for good. We cannot commend too strongly the practice of the State Board of Education, holding Institutes like this in the different sections of the State.

The committee have called the teachers in this town together several times during this year for the purpose of considering special topics connected with the discipline and instruction of schools. It has been our practice to select a particular topic for consideration at each meeting, and upon which some one was appointed to write an essay. After the essay had been read, the topic was opened for general discussion and suggestions by all the teachers, and usually a statement of the methods of instruction of each teacher was made in the hearing of all. These meetings, thus conducted, have we believe been interesting and profitable, and have given to many of the teachers valuable hints and assistance in the discharge of their duties in their respective schools.

There are no schools where greater skill, tact and patience are required, than in the Primary classes, and we believe a good Primary teacher is deserving of as much if not greater consideration and pay as the instructors of the more advanced classes. In order to raise the standard of excellence in our schools, we have felt that we must begin our reforms in the Primary departments. If we can only secure good Primary instruction, its influence will almost at once pervade all the more advanced classes. We think we have accomplished something in this direction during the present year, and hope that more will be effected in the year upon which the schools are to enter.

We have given special attention to reading and spelling, matters of the most importance, and yet too often neglected. Parents, in their great anxiety to gratify their children's natural ambition to get ahead, very often encourage them to push forward into Readers which they cannot possibly understand, as well as into studies like grammar and geography, which are not only altogether beyond their comprehension, but also to be studied in text-books which these ambitious pupils cannot even read. We have found classes who could not read the text of the lesson in geography which they were required to learn. We wish in the most emphatic manner to warn parents and teachers against the manifest evil consequences of hurrying children forward to text-books which they cannot read. There are serious evils of this kind existing in almost all our schools, which can only be cured by slow processes, and with the consequent loss of much valuable time to the scholars. The principal work of all our Primary and

Intermediate Schools should consist of learning to read and this should never be forgotten by either teachers, parents or committees. A programme of studies should be established requiring proper attention to each branch in its natural place. Grammar, for instance, should never be studied until both body and mind are well matured, because, being the philosophy of language, it can only be understood by those in whom the faculty of reasoning has been cultivated and developed. It seems to me that grammar should come last in the course of studies in Intermediate Schools.

Geography, as it has been commonly taught in the schools, in our opinion, been to a great extent a failure. The examination of the teachers discloses the fact, that even the best scholars, who prepare themselves specially for the work of teaching, are often ably deficient in the knowledge of the common and ordinary facts of this branch of study. Whole classes of intelligent pupils can recite by memory very glibly long passages from text-books, often without understanding a word of the language they are repeating. These classes become utterly bewildered as soon as any question is propounded in words which do not conform to their text-book. The truth is, that in the study of geography, as in most other studies, pupils are allowed to cultivate the memory of words, without attaching any particular meaning to them.

For the School Committee.—JOHN W. BACON.

NEWTON.

We may well be proud of our High School. In the thoroughness of its course of instruction, the intelligence of its teachers, the skill of its instructors, and every positive advantage for learning that we all have a right to expect, while we may hope for many other moral advantages, we see the results in a degree of refinement, courtesy, grace and mannerly conduct, that can only be expected among pupils of an age at which petulance, impatience and ungovernable temper are likely to prevail, by the positive example and influence of the teachers. We are bound to say that a large share of the satisfaction with the school is due to the refined moral influence of the gentlemanly principal and his accomplished assistants.

For the Committee.—JOHN B. GOODRICH.

Grammar Department.—At the close of the last year, the board fully studied the educational facilities and demands of the district and recommended to the board the introduction of other

es for the first classes; thus enlarging the sphere of usefulness of schools, from which a majority of our pupils go out into the duties of life. This recommendation met with the hearty concurrence of the committee; and the studies of the history of the United States, and physical geography, were introduced at the beginning of the year. This measure, while it was most gratifying to the teachers, proved an incentive to the pupils who entered upon the work with renewed zeal and interest, feeling that they were to do something to do other than to review those branches upon which they had been drilled from the day of their entrance into the Primary School. These studies will be completed during the year, while no complaint has been noticed in the common English branches; and we are sure that we have the entire good-will and thanks of the pupils enabling them to enjoy a taste of the higher branches, heretofore reserved to the High School.

Drawing has also been elevated into a regular study; and a set of Drawing Charts has been put into every district while a systematic course has been marked out. Thus far we are entirely satisfied with the progress made; and we trust, in the future, to be able to lead the pupils still farther on in the education of the "eye and hand" till our Grammar Schools answer the demands of the statute requiring "mechanical or industrial drawing."

We are also of the opinion that no pupil should graduate from the Grammar School without some knowledge of single entry book-keeping, and we are satisfied room can be made for this study by pursuing the true and economical methods of teaching arithmetic, geography and grammar, upon which so much valuable time is spent.

For the Committee.—GEO. E. ALLEN.

Music.—An endeavor has been made the past year to increase the efficiency of the instruction in music in our schools, especially in the Grammar department, where the teaching combines the science and art more than in the lower grades.

By one doubting the utility of music as a part of an education, it is only to know the difference in the character of our lower grades of schools where music is now taught, the cheerfulness and general improvement, and what it was without a song from one week's end to the other.

It is well known, that a child will sing when it is happy, and cannot sing when sullen or cross.

In our Primary Schools, singing is a *sine qua non*. With a song interspersed with the other exercises, the restlessness of the little ones is saved, attention is restored to the inattentive, and all care seems to pass away. No session of school should pass without music being

a part of the exercises. What would a church-service be without music? So with the school. Even our lyceums and literary societies are introducing music into their exercises.

Who knows but what the time may come when our towns shall be opened with a song?

There is no reason why the American people should not be as musical as the German. The education must begin with the child. One cannot be a musician; neither can he be an orator; he must learn to read music as well as to read his mother tongue.

For the Sub-Committee.—HORATIO F. ALLEN.

READING.

Towns may authorize their school committees to appoint a superintendent of schools. The advantages of such an appointment are obvious, but it is difficult to find a suitable person who can attend to his duties in a small town without detriment to his business. It would be wise that several towns might unite in appointing one man to serve in that position for each town uniting in the appointment. His field of his labor should be large enough to employ all his time; his salary should be paid by the several towns in proportion to the interest of each. He should be a man specially adapted to the work; he should have a heart large enough to take into its sympathies every child in his field; a head to comprehend its educational needs; a judgment incapable of being perverted by local influences. He should be capable of suggesting improvements, of aiding teachers, of pointing out faults and errors, and of effective labor wherever needed, the most valuable acquisition to the schools favored with his services.

School Committee.—HIRAM BARRUS, *Chairman*; E. HUNT, W. J. WILSON, MORTON, S. E. PARKER, C. B. MCINTIRE.

SHERBORN.

At the close of the fall term, it was thought best by you and by the parents in the district to suspend this school for the winter, and make provision for these children in some other way. In accordance with the spirit of an Act of our State legislature for the conveyance of children to and from school, it was decided that these children should attend the school in No. 1, and a person should be employed to convey them to and from school each term. This proposition was approved by all the parents, and Eight scholars have been thus transferred to the school in

the town. They have been very regular in their attendance, more probably than they would have been in their own district, because they have been conveyed to and from school. The arrangement has been pleasing to parents and children, and has thus far worked well. It is of course only temporary, as it will very likely be necessary to continue the school during the present year. But this experiment is an example of what may be economically and wisely done under similar circumstances.

School Committee.—EDMUND DOWSE, WILLIAM BROWN, ALBERT H. BLANCHARD.

SHIRLEY.

An important requisite of a good school is a faithful superintendent-committee. It is too late to ignore the advantages that come from this department of school government. Both teachers and pupils feel the influence of its movements; and are stimulated to increased action through the responsibility laid upon them by the existence of such a board of overseers. When, therefore, we have a lax committee, one that is careless of duty and thoughtless of the institution it has taken in charge, we may expect that money will be wasted, time misspent and all the means of primary instruction sadly curtailed.

It is a matter of conscience, no less than a matter of duty, the responsibilities of this important office should be met and discharged according to the best ability of every incumbent. Whatever other employment he might have upon his hands, he should never allow the duties of this place to be of secondary importance. He should visit the schools as required by law, and make special visits when any special cause should demand. He should counsel the teachers, rebuke them if they are faulty, and help their efforts in well-doing. He should mete out words of praise and blame to the pupils, illustrating to them the character of merit and demerit, and encourage them to persevere in every way of obedience and progressive effort. He should feel that the success or failure of each school under his charge depends on his fidelity or want of fidelity. He should also listen to the complaints of the parents and patrons, look into the merits of their complaints, correct their mistakes, and adjust every difficulty presented as well as the circumstances of the case would admit. If in any way he could not please all, as he most surely could not, he should show his interest in the cause he was elected to sustain. And the coming generation would bless his labors, inasmuch as they learned to appreciate his motives.

School Committee.—JAMES O. PARKER, SETH CHANDLER, SAMUEL LONGLEY.

SOMERVILLE.

The influence of a well-regulated High School is not confined to those only who become members of it; but, standing at the head of our Public-School system, it reaches out and influences various schools in the lower grades, and extends to even those posing them.

Heretofore the opinion has prevailed that our High School, in its excellences, was not fully meeting the demands of the community. The records of the school show that a large proportion of those who enter it do not complete the course of study and graduate, and this applies more especially to the boys.

It would give us great pleasure if all of our pupils could pursue to the end, the entire course of study prescribed for them, and avail themselves of all the advantages furnished by our system of public instruction. Since, however, this desirable result is not obtained, and all cannot be induced to pursue to its completion the uniform course of instruction, we deem it wise to make such an arrangement of the studies of the school as will meet the wants of the community and secure the highest good of the largest number. "If the mountain will not come to the prophet, let the prophet go to it." The High School being a public institution, and supported by general taxation, should be adapted as far as practicable to the necessities.

To meet, as far as possible, the wants of all, and to induce a still larger number of the graduates of the Grammar School to avail themselves of the advantages of the High School, even for a brief period only, we introduced at the commencement of the present school year, an

English and Mercantile Course of Study.—The entire course embraces a period of four years, and those who complete it receive diplomas. But, with proper restrictions, the studies of the course will be elective, and so arranged that those pupils who do not complete the course, can pursue those branches which have the greatest practical utility to them.

All persons, whatever may be their pursuit in life, should have a knowledge of all the branches taught in the Grammar School. But the studies of those schools should not be elective. But during a period when young persons exhibit a preference for some particular calling or profession, and generally their preferences are in accordance with the tendencies of their capabilities. These tendencies are develop-

than in others, but usually they are manifest when pupils arrive age to enter the High School.

An ancient philosopher, who was asked what a boy should learn young, answered discreetly, we think, when he replied, "What I wish to practice when he becomes a man." Therefore when a pupil enters the High School, or as soon certainly as his tendencies manifest, his studies to a certain extent should be elective, specially adapted to his contemplated profession or pursuit; and adaptation should gradually become more direct as he approaches the end of his school course.

A pupil who is looking forward to a bank or counting-room for employment, and who has only a brief period to attend school, should devote much of his time to gaining a knowledge of accounts, and in acquiring elegant and rapid penmanship. Another, having a preference for the mechanic arts, will need a practised eye and hand and a thorough knowledge of the particular department of his choice. A third, the study of mechanics and practice in mechanical drawing will absorb much of his attention. Still another, who is looking toward the ocean for employment and designs to become a ship-master, will need to be a merchant as well as navigator. He, therefore, should devote his energies to securing a knowledge of accounts, of algebra, logarithms, trigonometry and astronomy.

In a regular classical course, the studies of the first year or two are mainly preliminary and preparatory to those which are to follow. Pupils with the intentions specified, have but a brief period to attend school, it may be regarded a hardship if they are compelled to devote a large portion of that limited time to studies which are only preparatory to those they will never pursue. All this is obviated by the present arrangement.

We cannot refrain from stating in this connection, however, that with caution and a degree of reluctance we make any innovation on the regular and uniform course of study hitherto pursued in the

is our appreciation of a thorough and systematic course of study, and the incalculable benefits accruing from a careful study of the ancient classics, we cannot disguise our regrets that the necessity for the introduction of an English course seems imperative.

We do not undervalue the mathematics, the natural sciences and the literature. These all have their appropriate places and are valuable. But there is a grand defect in the education of those, from necessity or choice, have failed to enrich their minds from the fountain of classic learning. Therefore we would say to the State, do not omit no opportunity to secure a thorough knowledge of those

may relieve her labors, and contribute to the success of the

Word for Teachers.—That our teachers may ever carry the sun-
of a bright countenance into their schools, it is necessary that
have a pleasant home during their stay with us. In several
places we have found it difficult to obtain a suitable boarding place,
the school now loses an excellent teacher for this reason. The
gives us power to take land for school-houses wherever we deem
able; but it does not empower us to compel any family to open
doors to receive the teacher as an inmate. We are aware that
times it is inconvenient to do so; but are we not willing to suffer
inconvenience for the good of our children? We ask our fellow-
to consider this matter, and when it comes to a case of neces-
sity during the past year, to respond with more alacrity and thus
relieve the committee from anxiety in this respect.

School Committee.—A. DE F. PALMER, JOSHUA CLARK, GEORGE PILLSBURY.

WAKEFIELD.

control is the first requisite in those who aspire to govern
A kindly spirit, courteous manners and attractive speech
necessary, in addition to knowledge, to the best success of all
things; yet some may remind one of a chestnut burr, which pre-
sents a surface of repelling points, so that children, in trying to extract
the nut, are sadly pricked in the attempt.

and government in school—which is always just and friendly
management—is of paramount importance. It affects conscience and
character, which are first to be considered in the education of
men. Intellectual knowledge, merely, without moral principle, is
less than ignorance; and if a person has no conscience, the nearer
his mental relation to an idiot, the better it is for himself and
the community in which he lives.

to stimulate conscience requires in the teacher a knowledge of
the child and child nature, and ingenuity and great diversity of expedi-
ents to meet the necessities arising from the different capacities, tem-
peraments and circumstances of children. Where much is given,
much may reasonably be required, and a larger return should be
expected from ten talents than from one. The child of the feeblest
talent should be the most encouraged, and to taunt him with his
weakness is a crime, for he did not sin that he was born simple.

The superior knowledge of the Germans is attributable to their
early and compulsory education, which compels attendance on the Public Schools
at least three hours in a day for forty-eight weeks of the year, for

eight consecutive years. Every intelligent person knows that the prosperity, security and peace of every community, whether State or local, depend in a high degree upon the education of the people; yet there are many children in the State of Massachusetts and even in the town of Wakefield, of suitable age to attend school that are denied the privilege. Some are kept from school because they may earn a penny; others, for no other reason than the indifference of parents and guardians to the vital importance of education. In our last report, we spoke plainly upon this matter.

It seems to us desirable that the legislature should confer upon the towns of the Commonwealth more authority than they now possess to compel children to attend school, who without compulsion are kept at home and grow up in ignorance and vice.

School Committee.—P. H. SWEETSER, *Chairman*; CHARLES JORDAN, *Sec. and Treasurer*; E. A. UPTON, LUCIUS BEEBE, A. A. FOSTER.

WALTHAM.

Physical health is of the first importance, and some of our committee are inclined to think that long lessons to be learned at school and in the evening just before a child goes to bed are very injurious. Many a time have we seen a young child tired and half asleep, studying or trying to study, and with a very simple lesson which might have been easily learned in a short time, and then going to bed with a temper crossed or a sad countenance, and repeat again in his dreams the same tiresome work. Such is not "nature's soft nurse" nor her "sweet restorer;" and of tender years, to whom sleep and rest are so important, is it not a great risk? May not one reason why so many of our sleepers, have disturbed dreams and cannot "steep out" their forgetfulness during the hours of the night, be partly owing to the miseries of our childhood, and to a habit then formed of carrying our cares and sorrows to bed with us? It is not the expectation of our committee, nor do we think that it is the intention of the law to require of the children in the Primary and Intermediate schools such an amount of study that much of it must be done out of school hours, nor are the scholars of the High and Grammar Schools to devote more than one or two hours to studying out of school hours. It may, however, happen that from too great anxiety to succeed in his classes, a scholar may become nervous and excited, and spend more time in studying out of school than is proper. It is perhaps in such a case can correct the evil better than any

School Committee.—CHARLES A. WELCH, EMORY W. LANE, BENJ. W. WILLIS, GEO. HASTINGS.

WATERTOWN.

School Superintendency.—The committee are not a little disappointed that the town is so reluctant in its action upon the measure, frequently urged, of providing a superintendent for our schools. Earlier or later the mistake will, it seems to us, be discovered and rectified.

It would seem that reasons sufficient to produce conviction, had been presented in the reports of two years past. But we will present the following additional considerations.

Those business and professional men who are suitable for the management of school affairs; who comprehend the workings, wants and necessary modifications of school systems; who can properly anticipate the demands of an increasing population; and who can judiciously superintend the outlay of public funds, have every year less and less command of their time. Competition on every hand is so sharp and close that all men, in order to succeed, must in a measure be men of one idea. Their own business and professional duties, at least, do not admit of divided attention. They can easily afford to pay the time of another, but cannot afford to give their own. And it is coming to be a fact, that a school committee composed of such men cannot do all that is expected of them. The present committee do not hesitate to acknowledge remissness. They have looked faithfully to the general interests of the schools; they have patiently studied the fundamental questions of Common-School education; they have endeavored for meeting the general exigencies of the town school matters for several years to come; but they have not attended to the minutiae, to what, for the want of a better term, we will call the drudgery of school affairs. They have not had the time to do it. Visits of the committee upon the schools will grow in numbers less and less, unless the committee can be constituted of men so limited in range, as to regard the presence in the school-room as the principal part of a committee's work.

Again, let us put this matter upon the ground of consistency.

The town votes an appropriation of \$12,000 for highways. For the wise expenditure of this money, it is deemed necessary to appoint a man to superintend the work and outlay. We do not question the expediency of such a measure; nay, we approve it. But the town votes for school purpose an appropriation of \$14,000; has a real valuation, upwards of \$70,000 invested in school buildings and furniture, which need frequent repairs and alterations; employs many persons as teachers and janitors; has in training nearly a

thousand of its future citizens, and still persists in not listening to the oft-repeated entreaties of the committee, when urging the appointment of a school superintendent. What would be thought of a corporation having this amount of property invested and this number of persons employed, which did not engage the services of a competent person to have in charge the business of the concern? Would it be considered the height of recklessness not to make such an appointment? Is it less so respecting school matters? The town must be wiser in its highways of more importance than its schools. It does seem to us that if this proposed measure could receive a few moments of thoughtful consideration, our intelligent fellow-citizens would not hesitate to comply with the repeated request of this committee.

Relation of the Citizen to Public Education.—Never has there been a time when the problems of education ought to receive so much careful attention as now.

It is while contemplating these questions as essential to the social and civil prosperity, that we have seemed in this report to speak with impatience in view of measures looking to restrictions and retrenchments; we have spoken earnestly from an instinct of self-preservation. George Washington saw in his day the importance of common intelligence in a republic and regarded means "for the general diffusion of knowledge as of primary importance."

Said Mr. Hoar, recently, "There is not a power vested in any constitution, either in the congress or the people, towards the attainment and accomplishment of which the education of the people is the surest, the most direct, and the cheapest way." We sincerely trust to witness the earnestness with which Mr. Hoar is urging this upon the attention of congress. He is right, and should receive the indorsement of every American citizen. Other nations, England for instance, are starting upon a new career in universal education. The czar had no sooner returned from the Paris Conference than he commenced measures of educational reform. It is to say that the entire English nation is to-day, as never before, devoted to these great and fundamental principles. It was near the close of the last session of her parliament, that a law was passed establishing a system of universal education, as necessary to the protection of national supremacy. Mr. Gladstone, with a keen eye to the interests of the nation, recently declared that the "victory of Germany over France is the victory of the Common-School system of Prussia over the ignorance of the French Empire."

Senator Wilson expresses the same conviction, thus: "The success of compulsory education, established for more than two centuries in Prussia, is the victory of the Common-School system of Prussia over the ignorance of the French Empire."

tions of Germany, and for more than a century and a half in Prussia has brought forth fruits which the world sees. France, with a larger and more fertile country, with a prestige of a brilliant military record, but with a population ignorant, priest-ridden and emasculated in their manhood, lies beaten on every field and helpless at the conqueror's feet. This lesson should not be lost on the American people." It is true. Consider for a moment—we have in this country 1,007,000 illiterate white youth and adults; we have also another half million white children, under ten, growing up in ignorance. These children are to be invested with all the rights of suffrage. Shall we see to it, as far as we have power, that remedial measures, compulsory if need be, are at once instituted which shall correspond somewhat to the contingencies involved?

Ignorance is always the giant disturber of public peace and public utilities; our undivided efforts must, therefore, do away with ignorance.

It is education which doubles a man's value, put him where you will; we must not, therefore, complain against or even feel the burthen of taxation in the interests of education. It is by liberally educating our people that we make for the nation her surest political bulwarks and defences.

Chairman School Committee.—L. T. TOWNSEND.

WESTFORD.

Some complaint has reached us in relation to corporal punishment in our schools, but in most cases good order has been maintained without resorting to it. This we consider an indication of improvement, for while we are not prepared to say that corporal punishment should be entirely abolished, we are confident that he succeeds the best as a teacher who punishes in this way the least.

Tact and talent should, if possible, take the place of brute force, and brains are an excellent substitute for birch. All things being equal, the more tact and talent, the less birch is needed; but unfortunately the conditions vary with different schools, and with the varying dispositions of scholars. Children, like their parents, are never controlled by mixed motives, and to do away with compulsion entirely, would be no less absurd than to rely wholly upon it.

Superintending School Committee.—LEONARD LUCE, WM. A. WEBSTER, GEORGE F. F.

WINCHESTER.

Drawing.—The introduction of drawing in our school requirement, by the side of the branches heretofore required by statutes, is an important advance in the right direction. A knowledge of the art is not the mere making of pictures, or a dissipation of time and labor, drawing is not to be ranked with the mere graces of a finishing school.

It is but another form of writing, differing from the art of writing chiefly in its range of useful application, and the training of the mind for wider fields of useful knowledge. A form becomes a reliable mental property when the hand is able to reproduce with accuracy of observation, which drawing alone can most successfully cultivate, is of the highest practical value; and with accuracy of observation is almost necessarily associated accuracy of language and description; indeed the clearness of thought and power of combination which mark the man of "powerful mind," rest primarily on the accuracy of observation. He who observes well, will think well.

We have made a beginning with this branch in our schools, adopting the system of Louis Bail. During the coming year it will be necessary to supply the schools with charts and apparatus necessary to an effective system of instruction. Your committee deem it advisable to attempt methodical instruction first in the High School, to secure better practical acquaintance with the course of the work, before the course should be definitively prescribed in the Intermediate and Primary Schools.

The results of the work under Mr. Sanborn's direction are satisfactory, and the committee propose to adopt the methods he has treated in the inferior schools.

History.—This branch of study, in our school course, has received increased attention. Our reading books embrace interesting and beautiful selections of literature, a great variety of rhetorical and poetical excellences, and for many years the children are encouraged to make them good readers. Might not a good portion of this time be economized for the acquisition of the history of our country and State, without sacrifice of the art of reading? For acquaintance with literature, the formation of taste from the study of choice selections, would seem to belong to a later period of a child's progress, while for the benefits of instruction in history, it can be scarcely too young.

But we are not furnished with the proper books devoted to substantial history, and adapted to the methods of the school-room.

Peter Parley's shadow is of more tangible value to a child than that of the authors, who (with their enterprising publishers) have persuaded him in writing history for children. History for children differs indeed from that for adults as the drama does from its rhetorical equivalent in an epic poem, or a spirited picture does from a critical analysis of its parts, and their framing into books for the young. Such an adjustment of the material facts in our own history may supply the child with pictorial representation, and simple, expressive description, in accordance with his eager appetite for "stories," is certainly possible. And it is equally possible to form of reading good disciplinary exercise in the art of reading. If this economy were practised, our pupils might acquire a knowledge of history as well as the German pupils of like age, in whom this attainment is so conspicuous. Certainly our pupils should not complete their school days with so little knowledge of our own country.

The practice of daily reading in United States history, as a class exercise, with accompanying oral instruction from the teacher, has been introduced recently in our Grammar School. Of the results it is now too early to speak.

School Committee.—GEO. COOKE, A. CHAPIN, J. C. JOHNSON.

WOBURN.

Health.—For the intellectual training of children we rely mainly on the schools. To be sure, home influence may do much to supplement and assist the teacher, but after all, the bone and muscle that constitute the mental strength of our children are obtained by patient and persevering labor in the school-room. On the other hand, their physical training is for the most part carried on at home. It is almost exclusively in the hands of the parents, and the most that the schools can do is to take care that the mental training of the child shall not interfere with the means that have been employed for his physical development. In other words, they must see to it that the mind is not weakened and developed at the expense of the body. It were far better that our school system, which has been so long our pride and boast, to the influence of which we have justly attributed the best results of our American manhood, and which we have regarded as the foundation on which our republic rests, should exist only in the memory rather than that such a calamity should result. This division of labor and responsibility between the home and the school, the parent and the teacher, exists of necessity. The wisdom of it is

"Physical exercise should be used in school, to prevent nervous and muscular fatigue and to relieve monotony, but not as muscular training. It should be practised by both teachers and children for at least five minutes in every hour not broken by recess, and should be 'timed' by music. In Primary Schools every half hour should be broken by exercise or singing.

"Ventilation should be amply provided for by other means than open windows; though these should be used, in addition to the special means, during recess and exercise time."

Your rules and regulations are, for the most part, in harmony with the spirit of the maxims which I have quoted. One requirement, that in regard to the frequency of recesses in Primary Schools, has not been carried out. I would suggest whether it would not be wise to amend your rules in such a manner as to adopt this recommendation also.

The length of lessons and the proper method of instruction form the subject of another maxim. It is as follows: "Lessons should be scrupulously apportioned to the average capacity of the pupils; and in Primary Schools the slate should be used more, and books less, and instruction should be given as much as possible on the principles of object teaching."

In regard to the lessons, special care is taken that they shall not exceed the limits laid down in this maxim. Your views on this subject are well understood by the teachers, and, as far as I have observed, are faithfully carried out. There is but little chance for an error of judgment on the part of the teacher, for the work of each term is carefully mapped out, and the limits of it definitely fixed. Nor is any teacher, even if she were so disposed, allowed to pass beyond these limits. Furthermore, it has been recommended to the teachers, that the work of each term should be arranged in such a manner, that the same amount of study may be required of the pupil each week. I have good reason to believe that this recommendation has been generally, if not universally followed.

With that part of the maxim which directs that in Primary Schools the slate should be used more, and books less, and instruction should be given as much as possible on the principles of "object teaching," our record is in perfect accord. Every Primary desk in the town is furnished with a slate, at the public expense. It is a part of the furniture of the room, just as the desks and the chairs are. In the use of this slate and the blackboard, the time of every Primary pupil is largely occupied. The variety of the exercises, by which the pupil is thus amused and instructed, is limited only by the ingenuity of the teacher. Printing, writing and drawing are the most prominent.

Thus the slate has superseded the book in the Primary Schools, to the advantage of both the body and the mind of the pupil. It can hardly be said to use books at all in our Primary Schools. The only book which the child is allowed to use (apart from picture story books) is the Reader. All the rest of the instruction is based upon the principles of "object teaching." The study in the Primary Schools covers a period of three years; during this entire period the child is required to purchase but three books, Hillard's First, Second and Third Readers. So much for the Primary Schools. In the first year, in the Intermediate Schools, three books are used: a Reader, dictionary and mental arithmetic; in the second year a geography is added to this number. All the instruction is oral. And even in geography, such is the character of the text-book, Miss Hall's "Our World," the instruction is oral, and the exercises in it partake more of the nature of a recitation than a recitation. Passing from the Intermediate to the Grammar Schools, the general character of the instruction is preserved to an extent, although not so largely as I could wish. The branch most poorly taught is geography. This is not the fault of the teacher, but is due to the character of the text-book preserved. If the new book in preparation by Miss Hall, and soon to be published, shall be adapted to our Grammar Schools as "Our World" has proved to be to our Intermediate Schools, we may, at no distant day, expect for happier results in this branch of study. I believe that the instruction in the other branches taught in our Grammar Schools is given upon correct principles, and will compare favorably with that which is given in kindred schools in neighboring towns and cities.

Another maxim directs that "the duration of daily school hours (including time given to recess and physical exercise) shall not exceed four and a half hours for the Primary Schools; six hours for the other schools." Your rule upon this subject is as follows: Primary, Intermediate, Grammar and Mixed Schools shall begin at 9 o'clock, A. M., and close at 12 o'clock, M.; begin at 1½ o'clock, P. M., and close at four o'clock, P. M. No scholar shall be detained after half-past four o'clock." It will be seen that the daily attendance in the Grammar, Intermediate and Mixed Schools is one half hour less than the time prescribed in the maxim, while in the Primary Schools it is one hour in excess of the time. I commend the subject to your consideration.

But one maxim remains to be considered. It relates to the amount of time that children should be required to study out of school hours, and reads as follows: "There should be no study required out of school hours, unless at High Schools; and this should not exceed one hour

study out of school is required in any grade below the Grammar, in the Grammar Schools, as far as I have been able to ascertain, is not generally required. I am not aware of a single instance in which the aggregate of daily attendance in school, and study out of school exceeds six hours, the limit prescribed in the maxim for daily attendance in this grade of schools. There may be exceptional cases in which the limit has been exceeded, but none such have been brought to my notice.

Of the High School I can speak more positively. It must be borne in mind that the organization of our High School is peculiar. In other schools of this grade the duration of daily attendance is either four or six hours. In ours it is three hours. The first and second English and College classes attend in the morning, and the third and fourth English classes and the third College class in the afternoon. That practically there are two schools, one of which holds its sessions in the morning, the other in the afternoon. Speaking of the advantages of this plan in my last annual report, I used the following language: "The 'half-day system,' which compels the attendance of each pupil but one-half of each day, provided he has faithfully performed his duties, is not without its influence on the character, as it teaches the habit of self-reliance, and cultivates a feeling of responsibility. He is entrusted with his time from day to day, and his sense of honor forbids that he shall violate the trust. Another advantage of this system is its influence on the health of the pupils. During the time in which he is preparing his lessons, he escapes the necessary confinement of the school-room, an atmosphere more or less vitiated in consequence of every attempt to keep it pure, the interruptions occasioned by recesses and other causes, and the inevitable distraction of the mind by the work that is going on around him. Still further: if a pupil is disposed to use his time judiciously, and is willing to spend a portion of his evenings with his books, he may devote a few hours each day to manual labor, and thereby make himself useful to his parents, improve his physical condition, and prepare himself to perform the mental labor required of him with more relish and thoroughness."

It is also an economical plan. The present High School-house was intended to accommodate ninety pupils. With this system it can accommodate just twice that number. Hence it is to-day saving the expenditure of from twenty to thirty thousand dollars, in the erection of a new High School building."

My faith in this system has been strengthened by another year's personal observation of its practical working, and by the testimony of many of the citizens, whose children have enjoyed its advantages. One gentleman to me a few months since: "The 'half-day sys-

tem' is of great advantage to me. My son learns his lesson in the evening and morning, and I have the benefit of his services in the afternoon." Another remarked more recently: "My daughter has improved in health almost from the day she entered the High School. Had not the 'half-day system' been in operation there, I fear she would have been obliged to forego the advantages of the school. Remarks of a similar nature might be quoted almost indefinitely. Indeed, I have never heard an unfavorable criticism upon the system from any parent who has had an opportunity to judge of its merits. This fact, then, be distinctly understood: that scholars are not to be in attendance at the High School only three hours in the day. How much study is required out of school? Does the aggregate of attendance in school and study out of school exceed seven hours per day, the limit fixed by the medical faculty? It has always been the custom to advise freely in regard to the health of pupils, and I am acquainted myself with their mental and physical habits, and the circumstances would allow. But I have recently made a more thorough investigation of the subject, feeling that a thorough acquaintance with the facts was essential to intellectual judgment and a fair result of this investigation, I find that in the classical department, which is composed exclusively of young men who are fitting for college, the average time devoted to study out of school is three hours. Adding the number of hours of attendance at school, we have an aggregate of seven hours per day. In the English department, regard to which there is most cause for anxiety, as it is composed largely of young ladies, the average time devoted to study out of school is two and five-ninths hours. Adding the number of hours of attendance at school, we have an aggregate of five and four-ninths hours per day, one and four-ninths hours less than the limit fixed by the medical faculty. I have given the average time. That the matter may be thoroughly understood, let me add that the young lady in the school whose aggregate time of attendance at school and study, according to her own testimony, exceeds the limit fixed by the medical authority to which I have referred.

There is one other point that deserves notice in this connection. It is intimately connected with the subject we are considering, and I refer to the latitude that is allowed in regard to a choice of studies. It is left almost entirely in the hands of the parent, who is enabled to limit the amount of mental exertion, as the physical condition of the child may demand.

Alluding to this fact in my first annual report, I made the following statements in regard to it: "There are, in reality, four courses of study in the High School; the classical, the English,

ish and French, and the English and Latin. Every pupil, with approbation of his parents or guardian, may choose which of these he will pursue; and every pupil who shall have completed any one of them is entitled to a diploma. There is also a three years' course, for which a diploma is awarded for the completion of this, in the same manner as of the others. Still further, no pupil is compelled to pursue any one of these regular courses of study. Parents can select the studies as they prefer. A pupil may pursue only a single study. In such a case, his attendance at the school is required only during the term of recitation. These modifications interfere in no manner with the regular, systematic classification of the school, while, at the same time, they do much to meet the wants of those whom circumstances prevent from pursuing a regular course, or who wish to pursue a special course for a special purpose."

Thus we see that the advantages of our High School are open to every citizen is free to avail himself of them in full or in part, according to his circumstances or inclination may dictate. I am unable to see how we can more carefully guard against the danger of overwork in this school, than you have already done by the rules that you have adopted for its management.

Superintendent of Schools.—THOMAS EMERSON.

NORFOLK COUNTY.

BELLINGHAM.

Ventilation.—Though we may compare favorably with other towns in regard to the size, convenience and surroundings of our school-houses, yet there is one thing to which we would call the attention of our town, namely, the ventilation of our school-rooms. Every school-room should have a proper ventilator, so that air which is unfit for breathing can escape, and good, pure air be introduced, without incurring a few to the inconveniences necessarily arising from the present method of window and door ventilation. Go into any of our school-rooms after the school has been in session an hour and a half, and you would be astonished to find what an impure air your children are breathing. Every one knows that an active, strong mind must have a good physical organization to sustain it; and how can we reason-

force regular attendance. Moreover, the statute remedies, were more available, are directed mainly against flagrant cases of abscondism, and though perhaps well enough fitted for the needs of dense city population, are too coarse and general to reach a class of cases in which the evil, though of a rather different kind and less flagrant, is not less real, viz., the case of children who, from the remissness or selfishness of their parents, are, although far within the express requirements of the statutes, yet so habitually irregular in attendance as to be of serious detriment to their schools. Among these are a large number for whose constant irregularity there is more or less excuse,—but there can be no excuse for making others suffer for their fault or their misfortune,—and no school can be what it should be if these classes are liable to continual disorganization, and when the example of irregularity from whatever cause is perpetual.

It is of this class that the Ungraded School in a large part consists, and here they should remain so long as the disability or unwillingness to comply with the proper school discipline continues. It is possible, even were it desirable, to exclude them altogether; yet it ought not to be made the means of depressing the general character of the schools. And it was believed that upon this class of cases the Ungraded School might exert pressure enough to cause the careful discrimination to be made by parents between sufficient and insufficient excuses for absence.

Truancy.—The subject of truancy has for several years annually engaged the attention of the committee.

There is but little truancy outside of the Ward Schools, and it is difficult to determine how much of the irregular attendance is by permission of the parents and how much is due to truancy. Parents alive to the importance of education will for very slight reasons detain their children from school, and for yet slighter reasons yield to their wish to absent themselves. There has been a slight improvement in the average attendance in the Ward Schools for this year, compared with the last; taking the months of June, September and October, we find for 1869 the average attendance was 85.5-43 per cent., and for the same months for 1870 the average attendance was 89.24, a little over 3 per cent. higher. This improvement has resulted from the establishment of an Ungraded School, and the employment of one of the police officers as a truant officer. As these measures were adopted simultaneously, it is difficult to say what portion of the change is to be attributed to one, and how much to the other.

It is worthy of remark, that the employment of a truant officer was this year instituted for the first time; though his connection with

may with, and a youth now seldom learns more than a branch of a trade, and if he wishes to become a master workman, he must get the formation requisite to become so as best he may. Other countries are leading us in this matter. Skilled workmen from France and Germany are occupying the best positions in our workshops. If we wish to study mining we are obliged to go to Germany. Thus it is that every year our young men are going to Europe to acquire that practical instruction which they cannot obtain in this country. We live in a manufacturing town, and we should afford the young and the old mechanic every facility in our power for thoroughly mastering that part of his business which can be taught from books. Again, we live in a republic, and in order to carry out our theories of government successfully, we should have educated voters. The only danger that threatens us is ignorance,—that danger which prevents the successful formation of republics in France, Spain and Italy. It is important that every man should be able to read and write, in order that he may be an intelligent voter. It is entirely owing to the want of intelligence in our people that our elections have become so corrupt, and that men utterly unfit for office are placed over us as rulers.

Superintendent of Public Schools.—D. T. V. HURROON.

COHASSET.

The subject of compulsory education is more and more occupying the thought of philanthropists and statesmen. In Germany, which during the past year has given such proofs of national vigor and power, not only are all the citizens permitted to exercise the rights of free suffrage, and are liable to military duty, but they are required also to educate their children. No matter how poor or ignorant they may be, or how much they need the services of their children, they are obliged by law to send them to school, and to have them instructed in the elements of learning. The reasonableness of this requirement is apparent, when we consider that if all our children are to exercise the rights and privileges of citizens, they have a just claim to an education which shall enable them to exercise the high trusts of citizenship with intelligence. At the same time, the community have a right to protect themselves from the danger, the burden and the shame of an ignorant and debased class of people. And the best protection is to be found in a good intellectual and moral education, such as our Common Schools ought to afford. The Massachusetts system of education will not be complete till it makes the education of all the children in the State compulsory.

The question is often asked the school committee, "Why are children permitted to be absent from school, and to grow up in idleness and ignorance, when we have a truant law, and truant officers to enforce the law?" It is true that we have a good truant law, and truant officers who in many cases have done much to check the evil. But the difficulty lies in the want of adequate power to enforce the law. The parents of many of the children who are constantly absent from school are unable to pay a fine, and if they could they have not enough control over their children to keep them at school. At the same time, if the courts before whom the cases might be brought should sentence them to confinement, there is no suitable place in the county where they could be confined. They are not, and should not be treated as criminals, and therefore cannot be sent to the Reform Schools. They cannot be confined in their own house nor in any other proper place in the county. The sentence of the court could not be executed. There is no provision of a State institution, or of an institution in each county, where a class of children may be sent and instructed till they are able to attend school regularly in their respective towns. Till such provisions are provided, our truant laws will be, in many respects, a dead letter, and it will be impossible to secure the proper attendance of all children in our schools.

School Committee.—EDWARD TOWER, LEVI N. BATES, JOSEPH OSGOOD.

DEDHAM.

The frequent absentee, from whatever cause, is a dead weight on his class; and where any considerable number are frequent absentees the whole school is retarded and lowered in rank. It is better to keep back the constant and diligent pupil, to favor the frequent absentee, than to favor the frequent absentee, to favor the frequent laggard. Yet in a graded, classified school the frequent absentee must either be made of no account, or else the faithful must be deprived of their just rights. The better way is for the parents to send their children constantly while they do send them, even if they feel inclined to remove them from school at an earlier age in consequence of some other cause.

Keeping so many out of school in the summer months, for picking and other trifling matters, is robbery to the children, a deprivation and an injury to those who continue their attendance. We have no accurate data of the extent of this evil in this town, but from reports it is not less than ten or fifteen per cent. of the registered number, the average, and in the summer months a good deal more. It is a great waste of time, money and precious privilege. According to reports, the whole State is suffering in this manner. In some

cities the per cent. of non-attendance is almost equal to that of attendance. We cannot call ourselves an educated people, nor boast of the glory and efficiency of our Public-School system, while these facts remain. The compulsory system is broached as a possible remedy for this growing defect. In the Old World, in some countries, people are complaining of the compulsion which deprives them of religious and educational privileges, while here we are talking of the necessity of compulsion to get people to accept of the privilege, free of expense.

The benefits to be derived are so great in themselves that all our efforts ought to claim and use them to the fullest extent, and thus to exalt human nature under the laws of freedom, as well as the wisdom and righteousness of our school system. But it is certain we do not appreciate what we have. Our Public Schools are not put to their full capacity of usefulness. Our children—that is, very many of them—are not accepting all the education that is freely provided for

them. Much remains to be done before the full intention and design of our Public-School system will be realized. The children, it is assumed, are to be educated by the State. The State undertakes to make citizens of them. It is bound to give them such education as will help them to gain a livelihood, and contribute something to the commonwealth. The better it fits and prepares them for this end the less will be its losses, through the diversions of vice, idleness and crime, and the less will it be obliged to spend for prisons and houses of correction. The State now spends more in consequence of crime than for education. Seventy-five per cent. of our criminals are illiterate. If the State cannot remove temptation from its youth, it certainly ought to educate them so as to be able to resist evil and escape its blight. The Public School indirectly does the greatest reformation we have.

—GEORGE HILL.

DOVER.

Plans of Improvement.—As the result of abolishing the school districts, and bringing all the schools under the direct control of the town, we have now one new school-house, pleasant and commodious, located in the west part of the town, which for many years had been badly needed, and where, being remote from other parts of the town, it doubtless continues to be needed, at least for elementary and primary purposes. But it is to be hoped that the progressive

movement will not stop here, leaving the running of the schools the same as before the districts were abolished.

Let the five schools, including the one in the south parish, be brought into three locations,—the most convenient directions,—and five-sixths of all the scholars will come within a mile of such locations; then three first-class Grammar-School teachers can be employed, instead of being obliged to employ five or six and some of these third-rate teachers. By this plan the schools would continue eight or nine months in the year, instead of seven months for the five schools, for the same expense and with much better teachers.

Take another view: to run a school efficiently seven months in the year, that averages only eight pupils, incurs an expense of thirty-five dollars for each scholar per annum. Now, diminish the number of schools so that the average shall be forty-five pupils, and the expense for each scholar is less than nine dollars for seven months' schooling, with the same teacher. The difference is about five hundred per cent., for the same length of schooling and the same class teacher. This, as a business transaction, would be as great a folly on the farm or in the workshop; yet we are doing the same thing, year after year, in our school matters.

The State has done very much to open the way, in order to advance the cause of education, and many localities have wisely availed themselves of these opportunities and means, and are doing nobly. What is now needed is that some plan be devised, whereby every child in the State, so far as possible, be furnished with equal public Common-School education. The expense would be very small, the whole property of the State; probably an average of three or four mills per cent., wisely laid out, would accomplish a desired end, and make great improvement throughout the State.

Could an equal tax be made by the State on all the property for public educational purposes, and appropriated wisely, with care to every part of the State, on condition that each town should provide suitable conveniences, the result might be highly successful. Such a plan would greatly facilitate improvement wherever it is much needed.

Or, could a small assessment of one mill or so, per cent., be levied for appropriation where it is most needed, on certain conditions, it would meet a pressing necessity, and open the way to provide equal privileges at a common expense. Such measures may at first view appear to some as unjust, or as taking the attitude of charity, but it should be remembered that public education is a public duty. No State can afford to suffer any of its population to grow up

and vice,—and they generally go together. The present tendency in New England, is to concentrate population, and especially property. Capital is invested where it will pay the best. Consequently in this transition movement, many parts are left comparatively idle; and unless something is done to equalize the burden in regard to that which is for common good, some places may sink into idleness and barbarism. Besides, these rural districts have been, and will continue to be valuable tributaries to the largest and most important cities and towns of the Commonwealth. Nearly one-half in the country school,—and usually the better part,—will, if well educated, occupy important positions in the cities and business places of the country.

It is not the part of justice and of wisdom, as well as the part of generosity, that the entire capital of the State should contribute to increase the value of its own resources, and prevent an evil which would otherwise become a public calamity?

An influence would act as a mighty lever to raise the standard of education in many parts of the State, and develop resources in many localities that would otherwise be neglected.

Superintendent.—A. E. BARTLETT.

FOXBOROUGH.

Parents do an irreparable wrong to their children when they keep them from school simply on account of their own convenience. Deprived from school one-fourth or one-half of the time, the school will do little for them, and little to the children. They cannot keep up with their mates, they can acquire no fixed habits of study, and probably will have no taste for it. Left behind by their mates they lose their respect and become discouraged. They are thus the subjects of a condition which will follow them in its disastrous effects as long as they live.

Is there no wrong done to a school when a part of its pupils attend irregularly upon its exercises? The classes are hindered in their progress by those absentees who are dragging along behind them. The teacher is disheartened; the whole school, too, suffers a demoralizing influence.

Vacant seats remind the pupils who are present of those who do not occupy them, and their minds become quite too familiar with the thought that absence from school can be permitted. Besides, irregular habits in one respect have a natural and close affinity to loose habits in other respects. The irregular attendant upon school is very far more troublesome to his teacher in other ways than is the

one whose place is never vacant. Interrupted in his studies, kept behind his class, he can have little enthusiasm in study and idle, his hands are ever the more ready for mischief. Nothing which so promotes good order in school as plenty of work and a constant enthusiasm in doing it. Is there no obligation on the part of parents to promote the good of their neighbors' as well as their own, by coöperating with teachers and correcting the irregular attendance of pupils upon Public Schools?

But the wrong done has a wider reach; the town and State suffer. The State assumes and correctly assumes, that its safety and preservation even can be secured only by educating the people and youth. Ignorance is in direct antagonism with free government. Hence this State makes the support of free schools obligatory upon the towns. It also makes compulsory the attendance upon school of all the children between certain ages for a prescribed number of weeks during the year. Now a failure to comply with the provisions of the law frustrates the beneficent end it seeks to secure. A serious injury is done to both town and Commonwealth.

Viewing the matter as thus presented, the committee have discharged the duty required of them to correct the evils of irregular attendance upon school as far as lay in their power. They therefore adopt the following resolutions to which reference has been made.

Some complaint has been made of their action in excluding from school those whose irregular attendance was a source of so much trouble. It has been said that those who could or would attend school should not be excluded. It is needed to go that little the more on this account, and ought not to be excluded. But sounder reasoning would lead to a widely different conclusion. Those who attend school so irregularly might as well not attend at all, for they secure little or no good to themselves, and it inflicts great trouble on others. The little good on the one side is more than balanced by the evil on the other. It has been said also that the exclusion of pupils from school in such a case is in conflict with the law which requires parents to send their children to school. But the law which makes this requisition upon parents, requires also the school committee to exclude from school those children who do not comply with certain conditions. A definite end is sought by the law, and it makes it the duty of the school committee to make such regulations for the school as will best subserve that end. All the children and youth in the State have a right to attend school, but they have no right so to attend school as to frustrate the great end for which Public Schools were established.

School Committee.—N. S. DICKINSON, WM. H. THOMAS, MANLEY GROVER, COMEY, JOSEPH E. POND, Jr.

FRANKLIN.

ould earnestly recommend those scholars who design to teach desirous of taking a high rank, to give more attention to this of special training before undertaking the arduous task of im-knowledge to others. Where scholars do not have the ad-of a Training School connected with a High School or an, we cordially recommend a course at some one of our ex-ate Normal Schools. Our experience from the employment al graduates in our schools has been decidedly favorable to ss of those schools in fitting scholars for teachers. We are ans disposed to deny that it is possible, without the immedi-of such schools, for persons to become first-class teachers. have seldom met with them except where, through some ey have acquired those methods and principles of teaching eveloped by those schools. And the teacher who, through nterest or ability, cannot bring these resources to his aid, we ave mistaken his calling.

Committee.—GEORGE KING, S. W. SQUIRE, A. D. SARGENT.

MEDWAY.

cord of attendance in our schools the past year unmistakably more thoughtfulness on the part of parents upon this subject. ularity and consequent low percentage of attendance here- s been an evil in itself demanding reform; therefore it has purpose to employ every inducement to secure a daily attend-each scholar. It has been enjoined upon the teachers to ind their pupils of its importance, and we have lost no op- of advising with parents upon the subject. At the com-nt of the spring term we promised the schools that a list of rs, not absent or tardy during the year, should be incorpo- the annual report.

ort put forth on the part of the children to secure a place list has been exceedingly gratifying; and no less so the exhibited by the very many parents. Often have they ex- us their purpose to aid in this much needed reform. Tar- far more needless than absence. The former denotes rather ghtless, inattentive child who loiters away his time on the hool; while the latter results from sickness, or some real or necessity on the part of the parent. The power to correct rests mainly with the parent. And the importance of so

doing relates not only to the prosperity of the school, but to the future success of the child, by early acquiring habits of industry and action. Many parents expressed regret at the close of the examination, that their children had been absent one or more days during the year, and that because of sickness. The manifest of such interest is encouraging and indicates a higher average of attendance in our schools.

Secretary.—CHAS. H. DEANE.

MILTON.

At the last session of the legislature an Act was passed providing for drawing among the studies required to be taught in our Public Schools. As this is an entirely new feature in the course of study prescribed, there has been some hesitation in introducing the subject, the committee having no precedents to show in what manner the system should be conducted. But it is hoped that arrangements will be made so that instruction will commence with the new year, and more special teachers being employed for that purpose. It is also hoped that the art of drawing is to be recognized as one of the studies in which the scholars in our Public Schools are expected to excel. For, besides the elevating influences of the art itself, the benefits resulting to those even moderately accomplished in this art, will be inestimable, especially to those engaged in the mechanical and manufacturing industries. And it should, therefore, be the policy of the Board that we shall do absolute injustice to the children of this town, if we suffer them to go forth from our schools less accomplished in the art of drawing than the children of the other towns of our County.

School Committee.—ELIJAH TUCKER, SAMUEL BARCOCK, EDWARD J. JASON THAYER, T. EDWIN BUGGLES, HORACE E. WARE.

NORFOLK.

The school committee, in discharge of their duty as trustees of the law, respectfully submit their first annual report.

And first of all they are happy to congratulate the town upon the very commendable position it assumed at the outset of its corporate career, on the subject of popular education, as a liberal provision it made for the support and prosperity of our Public Schools. This is one proof, among others, that the new town is true to its true welfare, and able and ready to take as good care of its children as had been taken of it while it remained in its former

the same wisdom and happy foresight inspire its counsels in the

number of children in town between the ages of five and fifteen, is on actual count to be 222. The number that have been in attendance for a longer or shorter period is about 200; from which it is that between the ages above specified, the names of twenty-five children in town do not appear on the register as having been at school at all. It is hoped there existed a sufficient reason for non-attendance. It will be seen by referring to the table of attendance, that all our schools with one exception, the Centre, are small and so far as present indications go to show are destined to remain so for years to come. This is a misfortune. The fact not only increases the cost of the education of the individual child, but it deprives the school without those incitements to effort so important to the progress of both teacher and pupil. There lacks scope for that healthy rivalry which is so great a spur to exertion.

Length of Schools.—As originally proposed, the school-year has been 30 weeks, divided into three terms of 10 weeks each, and all the schools have run that length of time, with the exception of the North, where the teacher was called "by the powers that be" to serve as juror, and the school two weeks before its allotted term had expired. This deficiency will be kept in mind, to be made up another year. During the whole school term, it will be seen, has given us an addition of 10 weeks to what had before been usual, that is, in the Wrentham schools. In the town, though the same as has been usual in the Franklin schools. But even this is a shorter period than is usual in many towns, and shorter than is consistent with the highest success. A term of 33 weeks is of the most desirable length; and the committee would regard it as a most valuable addition, if the school-year could be lengthened to 33 weeks, giving us three terms of 11 weeks each, and beyond this they think the school-year could not be profitably extended.

The attendance in the pleasanter season of the year is considerably greater than in the more rough season of winter; and the number of pupils attending in the latter season who did not attend in the former is very few indeed. Do not these facts suggest the propriety of assigning the school-year to the more favorable seasons, and of thus avoiding the exposure and loss attendant on our cold and stormy seasons?

Home Influence.—This is sure to be felt whatever its character in

As a general rule the child will be in school, what it is at home, and bring its home training along with it. If governed at home it will be easily governed at school; if encouraged to do well at home, it will show it at school. In a word, the school must be

largely what home influences make it. Almost every disobedience or disorderly conduct the past year, is misdirected home training. It will be, in fact, impossible for schools what they ought to be without parental coöperation. Without such coöperation, it is hardly to be expected that they can maintain due order and secure a successful working order. Made up as it is of so great a variety of individual characters, no parents would have a profitable school and the pleasure of their children making progress in knowledge and all good things. They must look after them and insist on their doing so. They must encourage them in attendance, in obedience, in respect and in every moral excellence and right aspiration.

School Committee.—J. K. BRAGG, LATHROP C. KRITH, JACOB F. POMEY.

QUINCY.

Evening Schools.—To determine the number and location of Evening Schools, your committee called a meeting of all desired the same, at the town house, and located one in the Adams in the Willard school-house.

We employed two male and two female teachers in the First sessions held Oct. 31.

Paid for teaching, oil, lamps, and other incidental expenses from the special appropriation for these schools.

Thirty-five sessions of each school were held.

West School: whole number of pupils, 144; males, 113; average attendance, 77; youngest member, 12 years; oldest member, 40 years.

South School: whole number pupils, 80; males, 80; average attendance, 53; youngest member, 14 years; oldest member, 34.

The studies pursued were reading, writing, spelling, geography and book-keeping. Evening sessions have an attendance of day schools.

The teaching was made thoroughly practical. The diligence of the members has been uniformly good, and their progress is rapid.

We believe these schools a decided success,—far above expectations. We hope they may be continued and extended to all sections of the town, and that more females will attend. An appropriation of \$1,000 for this purpose for the ensuing year.

Chairman.—WILLIAM S. MORTON. *Secretary.*—ASA WELLINGTON.

RANDOLPH.

committee desire to call attention to the need of having some officers. We have made complaints during the year against boys for truancy. In each case before the court, it was decided, the boys on probation, and they have since shown that the best with them was taken. But another fact requires investigation by the next committee, who will need therein the aid of officers. There are in the town, as shown by the returns of the men to us, 1,384 children between the ages of five and fifteen in all the schools, as shown by the registers, about 1,100. Who are the others,—about one-fifth of the whole number? We think they should be carefully looked up, and be compelled to attend school. The committee have found that personal application by the parents or by themselves is the most effectual remedy for absences of children from schools, and think that the same would secure the attendance of a large part of the fifth of the town's children not members of school. In this work is seen the need of the aid of two or three discreet and active truant officers. Not that we think legal process should be resorted to, except in extreme cases, but a parent usually try to overcome any difficulty, if kindly encouraged by a person who seems interested, but especially if that one is clothed with authority.

School Committee.—NATHANIEL HOWARD, JACOB WHITCOMB, W. E. JEWELL.

SHARON.

Length of School-year.—All our schools have been favored with the same amount of schooling. Thirty-six weeks have been given to all schools in three separate terms. These terms were arranged so as to afford as long a vacation during the summer months as would be convenient for all concerned. We feel that as a town we have greatly improved in this regard since the adoption of the present system. Under the former arrangement some of the schools were favored with a longer school-year than others, but ever since the district system was established, equal privileges have been given to all of enjoying the same amount of instruction in our various schools.

Relations to Teachers.—There are some duties parents and guardians owe to teachers. It has seemed to us during the past year that there has been a fault, now and then noticed, that should be wholly avoided. We refer to the spirit of unkind and unjust criticism and censure passed upon teachers in such a way as to injure the

teachers' influence, and arouse a spirit of dissatisfaction sadly detrimental to its highest good. We do not expect a teacher will exactly suit every parent. This would require a revolution everywhere. Neither do we desire parents to remonstrate when the best interests of our schools demand a hearty assent. We only wish that the right method should be employed. If you have any wants either privately to the superintendent or to the committee, and the matter shall be examined.

Secretary.—SANFORD WATERS BILLINGS.

STOUGHTON.

Chromos.—The very liberal offer made by Mr. Loring of Boston, to furnish his beautiful chromos for the Public Schools at a discount of fifty per cent. from his usual retail rates, was presented to the committee to make an effort to secure some of them for the schools. We accordingly presented the matter to the scholars in the schools, and asked for a small contribution from those who were disposed to aid in the matter of adorning their rooms. A prompt and liberal response was made. One hundred and ninety chromos were thus contributed, which the committee duplicated for the "poor tax"; thus making our canine friends, or rather their pictures, a tribute to the æsthetic culture of our children. These pictures, which some could not distinguish from oil paintings, are found to exert a refining and elevating effect upon the young. A love for the beautiful, both in nature and in art, should be developed. And whatever tends to produce this result is welcomed as an active and efficient helper in the great work of education.

Drawing Books.—The legislature of last year passed chapter 248, "so as to include drawing among the branches of study to be required to be taught in the Public Schools." In accordance with this requirement, the committee, after examination, adopted "Thomomew's System of Drawing Books"; and introduced them into the several schools of the "Intermediate" and "Grammar" schools, and to the older ones in the "Mixed" schools. Drawing books were also furnished to the Primary Schools. There has been some objection on the part of a few of the parents, an unreasonable prejudice against the introduction of this study. We are not responsible for this. The makers of the State have seen fit to require it, and we have conformed to the statute. We have furnished the books free of charge by law, and if any parent neglects or refuses to pay for

lected in the way provided for such cases. (See General Stat-
chap. 88, sects. 80, 81.)

Method of Examination.—Owing to the fact that all the schools
on the same day, it was obviously impossible for the committee
use the same method of examination as heretofore. We could
visit all the nineteen schools at the same time. We therefore
used another way, which is new to us, but which has long been
used in the schools of Boston and vicinity. By a division of
we made a thorough personal inspection of the condition of
each school during the last two weeks of the winter term. A series
of questions in arithmetic, and the same number in grammar
were prepared for the examination of the highest classes in the Mixed
Grammar Schools; the other classes being examined orally. In
each, the piece was selected by the committee, and all errors in
recitation were noted; and in spelling, five words were given out
to each scholar. We thus obtained a very accurate knowledge of the
condition of each school. We have a record of the percentage
of correct answers for all the schools, but did not deem it advisable
to publish them this year, as the system had not been pursued here.

It would be desirable to have such full and precise examina-
tions held at the close of each term hereafter. This would not only
give a comparative estimate of the schools, but enable the committee
to determine very clearly the progress made from term to term.

Conveyance of Children.—It seems desirable that the town should
take some action in reference to the conveying of children to and from
Public Schools, when they reside at remote distances therefrom.
Ideally should this be the case with those who attend the High
School from the outlying districts. By chapter 132, Laws of 1869, it
was enacted that "any town in this Commonwealth may raise by
tax or otherwise, and appropriate money to be expended by the
committee in their discretion, in providing for the conveyance
of pupils to and from the Public Schools." Of course any such pro-
vision must be established on some general principle which would be
applicable to all cases. It might be done by fixing some mileage for
pupils to live beyond a given distance from school. Those pupils re-
siding in East and North Stoughton, or elsewhere at a distance, might
be enabled to avail themselves of the privileges of the High
School at the centre of the town.

School Committee.—THOMAS WILSON, ISAAC SWAN, C. DYER, Jr.

WALPOLE.

In nearly all our schools there are so many classes that can be given to each one. In some cases the teacher is hasten through the classes so rapidly that nothing more than simply to hear the answers to the questions. No time for explanations such as should accompany every exercise. In instances teachers have four or five classes in geography, and in written arithmetic. As a general rule there should be one of each. We recommend the reduction of classes in these to that number. Teachers must have more time for recitation, more time for exercises where the judgment and observation of the pupil are necessarily enlisted. At present, our whole teaching is too mechanical. Thoroughness is not attained by slavish adherence to text-books. We have no doubt that attention to terminations and constructions of words gives observation to the mind, and disciplines it to think easily and clearly; but if the mind is kept in this channel alone, it is at the expense of originality and independence. The mind should be trained to discrimination by requiring the pupil to mark the differences of things around him,—which are constantly coming under observation in the world of Nature. There is many a one,

"Can trace a panting syllable through space,
O'er flood, through forest, field, and tangled park,
Up to the Deluge, to the spacious ark,"

but who cannot discriminate an oak from an elm, a rose from a lily, a pickerel from a perch, or a pigeon from a hawk. If work well, the mind must be engaged upon subjects in which it not but feel interested; and if teachers can present such subjects they will succeed in disciplining the child's mind without boring it or making study seem irksome.

Music and Drawing.—These branches of education are so important and almost indispensable in our Common Schools. Of the first need hardly be considered, they are so appropriate that of the first need hardly be considered, they are so appropriate to refer more especially to vocal music. It is not only a relief from the usual routine of study, but it has an elevating influence, and tends to soften and humanize the coarse, rough places in our character. Moreover, it strengthens the vocal organs, and is an essential part of graceful reading and speaking. "It is a noted fact," says Dr. J. J. Jee, "that, when music is taught in our Public Schools,

disappear from our streets. It directly aids in the discipline of , while it calms and soothes the restlessness consequent upon ous study. It holds the highest rank as an aid to the memory. ings of childhood are never forgotten. The powers of obser- and expression are all heightened by it, and as a mental disci- is nowise inferior to the vaunted study of mathematics.” e is no one, it would seem, who is not able to see some good flowing from a continued practice of it, in the school-room, as elsewhere. In virtue of its influence upon the soul it must nd itself to all.

do not suppose there is need of recommending it to the favor person. Still, it is not taught as it should be in our schools. e of them songs are not even sung, for the reason that the s are not singers. In order, therefore, to have vocal music in all our schools, we think it would be profitable to employ a teacher, at a moderate compensation, to visit them every term e purpose of giving instruction in this important department. ssia, where they have the best system of education, perhaps, in rld, music occupies a very prominent place. Almost every one ed there is not only a good singer, but generally a good per- on some musical instrument. So important is this branch of ion coming to be regarded, that the Board of Education in ast report recommend that it be added to the list of studies d to be taught in our Public Schools. Seeing the great ad- es arising to the community from such a course,—as we should rovably have ten singers where now we have one,—we must y second that recommendation.

respect to the second branch of education, that of drawing, an the legislature was passed last year, requiring schools in the owns and cities to study it. The Board of Education now sug- e expediency of changing the statute so that its provisions may o all towns of over five thousand inhabitants. Of course, any containing a less number is at liberty to have it taught in its , if it shall so vote, or if the committee will take the trouble e it introduced. In several of our schools, during the past is branch of study has been pursued with good success. We hat during the present year it will find its way into all our . Among the different systems, we like that of Bartholomew, ould recommend it to parents and teachers as one calculated to e pupil along step by step, and, with faithfulness and applica- -comparing a taste for it, to make him a proficient in the art.

The Committee.—W. B. SMITH.

WEST ROXBURY.

There is undoubtedly ample room still for improvement in our Public Schools. There is yet apparent too much of what is prevalent in America,—the forcing or hot-house method of instruction,—due in part to the unhealthy, feverish ambition and desire for knowledge, which are so obvious in every phase of our society, and in part to the small amount of time allowed for education. But we think there is a tendency toward a healthier system, and that the time is not far distant when the young girl who exhibits signs of unnatural or precocious intelligence will be regarded as needing treatment for cerebral disease, rather than as a genius whose brilliancy is to be increased by stimulation. It is the destruction of the brain, already too active, and needing repose, rather than from intellectual exertion.

When this defect shall have been fully appreciated by the Board of Education of Massachusetts, and a more rational and safe method of instruction shall be adopted, our schools will then begin to produce the results which are demanded by the principle upon which they are founded ought to yield.

Although there may seem, at first glance, to be an inconsistency in compelling the citizens of a free country to educate their children, whether they will or no, in reality, such a requirement is in accordance with the true spirit of republican institutions. The form of government, the prosperity and security of the State, are largely upon the intelligence and virtue of the individual citizen. It becomes an imperative duty of the State to say to the parent, "You have no right to allow your son or your daughter to grow up ignorant, and you shall not do it."

It is the duty of the State,—most certainly of a State where universal suffrage prevails,—to see that the youth upon whom it is to rest the responsibility of its government, are properly educated to that responsibility, and sufficiently educated to enable them to make an intelligent use of their privileges and rights. The statistics of our jails and prisons show beyond question that crime and ignorance almost always go hand in hand. In the Ohio penitentiary 276 inmates, nearly all were reported to be ignorant, and a large number of them unable to read or write; and in Auburn prison only 39 out of 244 inmates could read and write. The conclusion cannot be avoided that our Public Schools are the only safeguard by which the State is to protect itself against pauperism.

Drawing.—In accordance with the law passed by the Legislature in 1870, drawing has been introduced during the past

and Grammar Schools. We regard this as one of the most important steps taken for many years in the laws regulating education in Massachusetts. Intelligent observers familiar with the comparative skill of different nations in the industrial arts, have long been of opinion that, while Americans are second to none in inventive ability, they are far behind many European nations in the application of scientific laws and methods to practical uses, where nicety of finish or beauty of design are called into requisition. This defect was particularly noticeable in the Paris Exposition in 1867, where an opportunity was afforded to compare with each other the best works of the nations having any claims to be considered as civilized, in the industrial and practical arts, in textile fabrics, in machinery and in the fine arts.

Although it was claimed, and probably with truth, that America was not fairly represented at the Exposition, it was very apparent that our manufactures were greatly inferior to many countries in all manufactures in which beauty is an element. And the reason was, that in Prussia, Germany and France,—the countries most conspicuous for the elegance of taste displayed by their artisans as well as their artists,—drawing was taught as regularly, and quite as much a matter of course, as reading or arithmetic, and thus a perception of the beautiful in form and design was developed, and a skill in representing that perception was attained, which became apparent in all their work. Even England, which had considered herself the model and type of a manufacturing nation, was forced to concede her inferiority, and has established schools for the express purpose of teaching drawing, both free-hand and mechanical, in Public Schools. Thoughtful Americans also saw the importance of this branch, and have labored diligently until they succeeded in having drawing taught in our Public Schools.

It is not alone or chiefly on account of its mere utility is the teaching of drawing to be encouraged. Thousands, who probably will never make use of it in any industrial pursuit, will be grateful that they have the opportunity given them to develop and strengthen their love for whatever is beautiful in art and in nature.

It is curious to observe with what interest nearly all the pupils in our schools where drawing has been introduced began its study. It is soon to judge whether the results will be all that were expected, but there is no reason to doubt that much benefit will be derived from this important branch of study.

School Committee.—JAMES W. ROLLINS, *Chairman*. D. S. SMALLEY, *Secretary*. ELIAS THORPE, JOHN M. ORDWAY, THOMAS MAGENNIS, JOHN W. MCKIM, EDWARD S. C. H. SEWALL.

WEYMOUTH.

Truancy.—From the return of the assessors made to the selectmen, it appears that on the first day of May last, there were one hundred and three persons between the ages of five and fifteen years of age residing in the town of Weymouth; at least two hundred persons are not attending school as required by law. We believe that the enforcement of the accompanying by-laws would tend to diminish the number of those who have thus failed to comply with the requirements of the State.

By-LAWS ON TRUANCY, adopted by the Town of Weymouth, and approved by the Supreme Judicial Court of Massachusetts.

SECTION 1. Every person having under his control a child between the ages of eight and fourteen years, residing in the town of Weymouth, shall be bound during the continuance of his control send such child to some Public School in said town, at least twelve weeks, six weeks of which shall be consecutive. For every neglect of such duty the party offending shall forfeit to the town a sum not exceeding twenty dollars; but if it appears upon the trial by the truant officers or school committee of the town, or upon the trial by the court, that the party so neglecting was not able by reason of poverty to send such child to school, or that such child has been otherwise furnished with the means of education for a like period of time, or has already acquired the equivalent of learning taught in such schools, or that his bodily or mental condition is such as to prevent his attendance at school or application to study as required, the penalty before mentioned shall not be incurred.

SECT. 2. Teachers having charge of pupils who are habitually absent shall report in writing their names, the number of times absent with the names of their parents or guardians, to the committee on truancy, or the superintendent of the town, and it shall be the duty of either the committee or superintendent to investigate cases so reported, and if in their judgment deemed necessary, they shall report the same to the truant officers, who shall prosecute such offenders. The party convicted of truancy under this section shall forfeit to the use of the town a sum not exceeding five dollars for each offence, and a sum not less than five or more than ten dollars for each subsequent offence.

SECT. 3. Any minor convicted under either of the preceding sections shall, at the discretion of the justice having jurisdiction of the case, in addition to the fines mentioned in said sections, be committed to any such institution, house of reformation, almshouse, or other suitable situation for the purpose, for such time, not exceeding two years, as such justice may determine.

SECT. 4. A minor convicted of either of the offences mentioned in the preceding laws, and sentenced to pay a fine, may, in default of payment, be committed to such institution of instruction, house of reformation, almshouse or other place, provided as aforesaid.

r. 5. Any trial justice shall have jurisdiction of complaints, made under preceding sections. All warrants issued upon such complaints shall be made returnable before said justice at the place named in the warrants.

r. 6. The town shall appoint at the annual meeting four of the constables of the town as truant officers, who alone shall be authorized, in case of violation of the preceding by-laws, to make the complaint and carry into execution the judgment thereon.

Superintendent.—Your committee recommend the employment of a superintendent of schools.

We believe that with a superintendent, a greater uniformity and a better classification in the schools can be secured than in any other way. No matter what the ability or how wise the plans of the committee, if the execution of those plans is intrusted to thirty or forty persons, without the guidance of one controlling mind, confusion and inefficiency may result.

The importance of a thorough and efficient supervision of our schools can hardly be over-estimated.

A committee that can be appointed in this town will be able to do what ought to be done for the schools. Educated and intelligent persons only can perform this work properly. A great amount and variety of labor is required,—such as personally examining teachers and scholars for promotion from one school or grade to another; visiting the schools and giving directions; making rules for the school; settling difficulties that are continually arising between teachers and parents, and others; the charge and care of the school property; the examination of schools at their close; the making of returns, and so on, etc. Such members of the committee as are qualified to do this work, are generally fully occupied with their own affairs, and soon find the labor necessary to a conscientious discharge of their duties, a heavy draft upon their time than they can afford. The burden and expense of the office occasion frequent changes. Committees usually divide up the work, assigning to each a special field of labor, and consequently no one member of the board has such knowledge of the schools as will enable him to form a just estimate of them, or to understand the wants of all. Committees do not make a specialty of this work, and have other duties that occupy their time.

This work needs a man well acquainted with school systems,—one capable of advising both teacher and committee, one perfectly familiar with all the branches taught in our schools, and one who shall devote his whole time and ability to the work. It is believed that such a superintendent can perform the work vastly better than any committee of persons can do it, and that as a matter of economy simply, it is cheaper to

employ such an one and pay him liberally, than to pay the committee's bills for what they do, even though they do a large work without charge, as has been the case during the past year.

The committee are perfectly satisfied that there ought to be much of this kind of work done as any one man can do, however qualified he may be; that no committee of six can do it as well as one man could, would or could afford to do it as cheaply as it could be done by one man, and that in proportion as any part of this work is done by a committee the schools must suffer, and consequently a portion of the tax is wasted.

School Committee.—J. W. LOUD, A. A. ELLSWORTH, G. W. FAY, ARTHUR C. C. TOWER, C. Q. TIBBELL.

PLYMOUTH COUNTY.

ABINGTON.

We rank geography among the important studies of the School course, and assign to it sufficient time for pupils to acquire knowledge of what are termed the essentials of the branch. The study of geography should be reduced to a science, and should exercise the varied powers of the mind and contribute to the growth. We should first consider the outside of the earth, and present to the minds of the pupils interesting facts about home, and where they reside; pointing out the streets, fields, hills, valleys, and such other objects of interest as may occur to the teacher. This drill is intended to give the pupil correct views of the nature of the objects that are seen on every hand, and the terms that describe them. Here the observing faculties, so full of activity in the child, find their outlet for development. It is through representative objects that the geographical lessons are to be taught. If the globe is used to illustrate the contour of the earth, the location of mountains, oceans, rivers, lakes, cities, &c., it should create in the pupil's mind a life-like picture or image of the earth as it really exists. This gives significance to the form and nature of our planet. The geographical terms acquire a meaning, and all the physical regions are so many real objects to be studied, appreciated and made a source of knowledge. The course should begin with the first lessons and be continued throughout the course. The teaching should be practical, and no time spent in

the mind with facts and figures which will never be recalled. The method of teaching this branch by well arranged topics has our approval. This method requires careful preparation on the part of the teacher, as no one can conduct a recitation creditably, without a good understanding of all the relations of the subject. If pupils are allowed to express ideas in their own language, a more thorough and valuable knowledge of the lesson is secured. Thus taught, it becomes a science of great value; for how can it be regarded otherwise, when we remember how beautiful is this earth of ours,—an earth so grand in all its conditions, the home of so many different peoples and such varied forms of animal life!

"How shall we teach history?" is a question frequently asked, even by our best teachers. We have often remarked a lack of interest in the study, and felt a deep regret that a branch so full of valuable instruction should be regarded with so much indifference. We would recommend the topic method of teaching history, as the best, so far as the observation has extended. Interesting facts clothed in the pupil's own language, and narrated in the order of the occurrence of the events to which they relate, make a more acceptable recitation than nicely prepared answers to formal questions. Taught in this manner it enlarges the range of thought, improves the taste and greatly strengthens the mental forces.

We need in all departments more oral instruction, better illustration, and more general explanation. All teaching should be characterized by clearness of understanding, breadth and variety of knowledge. This should include effective instruction in regard to civil and social obligations.

Where, if not in our Public Schools, are large numbers of our youth to be qualified for the faithful performance of the duties which the good citizen owes to the community in which he resides, and to the government that affords him protection?

School Committee.—JAMES H. GLEASON, BENJ. F. HASTINGS, CHARLES W. SOULE.

BRIDGEWATER.

Teachers' meetings have contributed more to the improvement of the schools than any other one thing. These meetings were commenced at the beginning of the year at the request of the committee, and have been held regularly in the High-School room, on the second day of each month. The attendance of teachers has been good; the committee have all been present at each meeting, with a single exception, and parents and friends have been present to some extent. The exercises have consisted of reading of the essays by the teachers; questions by the teachers and committee; teaching exercises, in

which the teacher has, by the aid of her class, illustrated the art of teaching a given subject; and Messrs. Boyden of Bridgewater, Harrington of New Bedford, and Merserve of North Bridgewater have favored us with valuable addresses. The subjects of the exercises have been confined to school work.

The teachers have grown individually by reading, speaking, and thinking about the subjects which they were to present in their schools have been benefited by the increased knowledge and enthusiasm of the teacher. These meetings have been of no small value to the town. The committee have given their time, and with the aid of the towns have defrayed the expenses which have arisen from such other causes. Hundreds of dollars could not express the value of the meetings have been to the schools.

Teachers' Library.—Ministers, lawyers, physicians, business men, and mechanics find it essential to their highest success to read the biographies and maxims of those who have risen to eminence in their profession. The true teacher must study the principles of education and the biographies of those who have successfully applied these principles. The time is fast passing in which every one who cannot how to read, write, cipher and whip can pass as a successful teacher. Many of our teachers desire to read such books, but have no access to them. Many do not receive sufficient pay to purchase such educational works. The highest interests in our schools require that teachers to read them; consequently, the wise course for the committee seems to be to allow the committee to use a part of the town funds of this year—say forty dollars—for the purchase of books on this interesting matter upon subjects pertaining to school instruction and discipline; these books to be kept in the High-School library, and to be loaned to teachers according to such rules and regulations as the committee may adopt. Just criticism and a good library will be strong inducements for live teachers to come to Bridgewater.

School Committee.—PHILANDER LEACH, JOHN A. LOTHROP, ALBERT E.

EAST BRIDGEWATER.

Employment of Teachers.—Every year we are subject to the loss of one or more good teachers, who are drawn from us by the liberal offers of other towns. The highest pay received by any teacher of any school below the grade of High, is but three hundred and fourteen dollars, while most of them receive but two hundred and some less than that. Other towns offer them five hundred dollars for the same work, and as a matter of course, they ask to be released from their engagements that they may accept such liberal offers.

in our manufacturing shops earn more than the teachers in our schools, yet it costs the latter time, money, hard work and often fatigue, to fit themselves for the performance of that which is a hard, and too often a thankless task.

We pay more to those who hew their wood and draw their water, than to those who instruct their children. This is not right nor even equitable. We cannot afford to lose our best teachers each year; we cannot afford to incur the risk of constantly employing strangers. Therefore we must employ a poorer grade of teachers, shorten our school terms or increase our appropriation for schools. The first course we would be objectionable to all parents who have the welfare of their children at heart. It remains then to choose between the two alternatives,—more money or shorter school terms. We ought to increase our appropriation five hundred dollars to maintain our schools as they now are. While this may slightly increase the rate of taxation, let us not forget that an ignorant, unthinking population is the most grievous tax ever imposed upon a town, county or State.

Resolved Committee.—G. A. WHEELER, E. W. NUTTER, WILLIAM ALLEN.

HALIFAX.

We believe in good schools; that there is no comparison between a bad teacher and a good school. The only way to have good schools is to employ good teachers, and to obtain and retain them we must pay the proper price for their hire. During the past year the committee have employed only the best teachers from the Normal School. This school is especially well adapted for the education and training of teachers for the Public Schools. It has all the prestige, power and ability of a State institution. All the best and approved modes of instruction are there used and taught. True, there have been some teachers who have graduated from the Normal Schools, and yet have proved excellent in the schools and met with signal success, and such teachers we have endeavored to engage and retain; but when we look back upon the schools taught in years past by those who were not Normal School graduates, and which proved to be almost failures, and compare them with those taught by Normal graduates, which have all proved successful, how can we help coming to the conclusion, which reason naturally suggests, that some special preparation, by way of study and training, is necessary to qualify teachers for schools, as well as to prepare persons to prosecute other occupations with satisfaction and success? We readily recognize the fact that to follow any profession or trade in life with ability and prosperity, an individual must have some training for that employment. How then can it be

expected that the untrained, uneducated teacher can calling exceeded by none in importance and interest and ability,—that of teaching the youthful mind?

School Committee.—IRA L. STURTEVANT, CORDELIA J. RICHMOND, N. TON.

HANOVER.

We have given each child in town an opportunity to receive six weeks of schooling. We have also been able to replace the services of tried and faithful teachers by a slight increase of pay for six weeks, divided into three terms of twelve weeks each. This can be deemed a single week too many. Even with this we do not surpass some of the towns around us. And the coming the ensuing year may find it essential to the welfare of so many to retain in it some teacher by a slight increase in the stipend. Neither of these things, to say the least, will the schools be injured.

Drawing.—By a statute of the Commonwealth this town, as all others, is now required to teach drawing as a branch of common-school education. It is put upon the same basis by the law as arithmetic, grammar or geography. We deem this a wise provision. Instruction in drawing, though meagre, will train both hands and will be an endless source of interest to scholars, young and old. To assist all in learning to write, will be of advantage to all. A demonstration of mathematical and philosophical problems, that during the coming year drawing may be introduced into the schools of the town. But it can be done only in a simple and unpretending way. We cannot hire, at least unless the town vote for it, a drawing-master. Our teachers, except in rare cases, are unprepared themselves to teach it. So the school committee will be compelled to limit its teaching to its simplest elements. In what they can do in this particular they will gladly do. They will receive support and encouragement from the town in the undertaking.

We are pleased to add that several of the most efficient teachers have received the training which has fitted them for their work in the High School. The value of this school is made evident in this way as well. Were those of our young ladies hoping to become teachers, compelled to go out of town to get the needed training, either they would not become teachers, because not able to bear the expense, or, if they did, of temptations incident to boarding-school life, would be

large sums of money out of town, or would be lost to us by going
 other and better paying towns to teach.

School Committee.—ANDREW READ, JEDEDIAH DWELLEY, EDWARD A. PERRY.

HINGHAM.

There is no special disparagement to our present system of instruction
 that it is too textual, for this has been one of the chief faults of
 educational systems. The book has always been put before the
 flexible mind; and thus many vigorous intellects made to suffer
 of the failure to adapt themselves to the hard, unelastic
 of the text-book. Manuals of study are but guide-boards
 indicating the intellectual road along which young minds are to travel;
 as a file of soldiers, but with that freedom of action natural to
 mind's individual constitution. In the primary studies of lan-
 or the sciences, the text-books generally furnish the best
 of the solid, conscientious memorizing of rules being the first
 step to success. But in such studies as arithmetic, English gram-
 mar, geography and history, there is scarcely any teacher who can-
 from personal knowledge of the mental peculiarities of the pupils,
 give upon the best text-books that can be written; and the com-
 munity are glad to see that, to a great extent, the teachers share this
 opinion. Education is not accumulation, but growth; and parents
 are disposed to complain of their children's slow progress (as
 from a superficial knowledge of facts, do), should remember
 that advancement is not necessarily indicated by the pupil's having
 read a certain page in the "Third Reader," or a particular rule in
 arithmetic, but by their enlarged ability to read well from any book,
 to calculate correctly under any circumstances.

Attendance.—The lack of the proper attendance of scholars is the
 chief disease at the vitals of the school system. Possibly during
 last year this complaint may not have been as virulent as in for-
 years, but there is in every school a migratory class, whose seats
 are all and empty during alternate days, weeks or months, as the
 case may be. These scholars remain away long enough to forget all
 their studies, and acquire numerous objectionable accomplishments,
 to become contaminators of the moral atmosphere of the school.
 Parents who keep their children from school for the most
 trivial reasons, are disposed to blame the teachers for all deficiencies
 of scholarship. This is as unkind as it is unreasonable. What chil-
 dren and parents need alike, is a fuller realization of their legal as
 well as moral obligations in this matter. We should strive to remem-
 ber that the school system is not a private convenience, but a public

necessity ; and, when children are kept from school, the child is robbed of its best wealth.

School Committee.—JOHN SNYDER, HENRY SIDERS, PETER HERSEY.

KINGSTON.

No branch of education is more practical and important to the government. We know that good order is generally valuable as contributing to success in the literary exercises. But order is as much an end itself as it is a means to an end. It is not a scaffolding, but an essential part of the very edifice of education. We are to train the children to be patriotic and orderly citizens of a republic. We are to teach them the lessons and laws of good government. We are to permeate their entire natures with renovating influences. If they are self-willed and selfish, passionate and rebellious when they come to us, we are to strive to make them obedient, scientific and true, loving and gentle before they leave the school. The teacher should seek all this without the aid of the parents. The course he will achieve the end far more easily and effectually without aid. Government and moral discipline are as much a part of a legitimate business as is the teaching of reading, spelling and arithmetic.

There are three kinds of government, both in the family and in the school: the first, where the children do pretty much as they please and almost invariably do wrong; the second, where the children do as their parents and teachers require or allow; and the third, where they do as they please and always do right. The first is anarchy. It is Bedlam let loose. It is no government at all. The second is the government of external authority and force; which is not the true self-government, implying the perfection of the child. Now you will find many schools, alternately under the first and second kinds of government, according to the personal power or weakness of the successive teachers. That the third kind of government is possible and is not wholly Utopian, is manifest, since there are children who are docile and well behaved, whoever are the teachers. Let these exceptions be made the general rule and we shall have no failures from insubordination and disorder, nor will there be any need for resorting to those punishments which in themselves are unnecessary and oppressive. It will be seen, therefore, that the government has much to do with the government at school.

No expense, whether of time or money, for real education is ever wasted. Where a people are too poor to support schools, they find that their very poverty has been induced by their ignorance.

It was stated in a speech in Congress upon the bill for promotional education by Hon. Mr. Hoar of Massachusetts, that the experience of the past fifteen years has shown that the Common-School system of Prussia has revolutionized the manufacturing industries of the world; and England, at the very last session of Parliament, passed a law to establish a system of universal education as necessary to the regaining of her manufacturing supremacy. Mr. Stowe has recently declared that the victory of Germany over France is the victory of the Common-School system of Prussia over ignorance of the French Empire. We well know that in our own intestine struggle, the more general intelligence among the armies did as much to procure us the final victory as did our superior numbers. Let, therefore, our system of public instruction be maintained at any cost.

The older persons, who remember to have seen a Spanish dollar, with its two pillars representing the two mountains on the opposite sides of the Strait of Gibraltar, called the pillars of Hercules, may not be aware that before the discovery of America and its mines of precious metals, the motto over the pillars was, *ne plus ultra*—nothing beyond. By the adventurous energy of Columbus, that stereotyped declaration of ages was proved a lie. There is no such forbidden barrier to discovery and progress in knowledge. There are no bounds of past and present attainments over which is inscribed, Thus far you may go and no farther. Each succeeding year opens new opportunities.

Superintendent of Schools.—JOSEPH PECKHAM.

LAKEVILLE.

It is fair to judge of the interest a man feels in the success of any enterprise, by the amount of money he is willing to invest in it, and the amount of personal attention he is willing to bestow upon it. As to personal attention, where is the father of a Lakeville school or girl that can come forward and claim the merit of ever having aided any of our Public Schools, except, perhaps, as an official? The amount of money appropriated seems to be more generous, but that has been found to be entirely insufficient to enable the community to supply any of our schools with teachers that have been educated with a professional training at either of our Normal institutions, which were established and are supported at the public expense, for the express purpose of furnishing teachers for the Public Schools. Now, if it is good policy for the State to educate teachers

at our expense, it would seem to be very bad policy for ourselves in a condition to employ them.

If we are to succeed in maintaining a respectable population in the towns of this Commonwealth; if we are to succeed in giving our children such an education as shall enable them to compete fully and upon equal footing with others in the battle of life, must we change our entire policy in regard to administration of our school system. It is, beyond the question of a reasonable expenditure, the most ridiculous absurdity for us to maintain eleven schools for the accommodation of our two hundred scholars, when a less number, more than one-half, would do the work much more effectively.

For the Committee.—M. HASKINS.

MARSHFIELD.

Arithmetic might be taught in a more practical manner than at present. One pile of wood, one stick of timber, or one yard of cloth, actually measured by the pupil, and the results wrought out in a transaction at the store, with the change made and the receipt written by the pupil, is worth a score of abstract examples which never meets with out of the text-book.

A word to parents. We have spoken of your cordial cooperation with the teachers. We bespeak their continuance. A teacher is entitled to much charity and consideration. The routine of duties is often onerous. She must act with promptness and decision. A teacher expects from a pupil a respect and confidence which is often not accorded by his parents. Truthful children often innocently give an imperfect report of the particulars of a personal difficulty. In such circumstances, a private conference with the teacher is a safeguard against further complaint.

School Committee.—MIRA J. CROSSLEY, E. ALDEN, Jr., SARAH E. LEO.

MIDDLEBOROUGH.

Truancy and Irregular Attendance.—The great barrier to progress in our schools towards universal education is irregular attendance. For years, in almost every report, attention has been called to this great evil. Able essays have been written by eminent investigators and published in educational journals. Legislatures have tried to legislate in vain, to check its growth. Notwithstanding this, the schools present altogether too dark a record. Scholars are missing from the streets and even found at their homes, whose places and

school-room. Last year 31 per cent., or \$2,139 of the school money raised by this town, was lost by actual non-attendance, not to mention the serious drawback to those who were faithful to their duty. This year presents a record but little better.

Looking over the report of the Secretary of the Board of Education we find the evil to be general and wide-spread. We are led to inquire, What can be the cause, and what the remedy? Says one, "Much money is raised. Massachusetts stands second to but one State in the Union, in the amount of her school expenditure per scholar, it being \$16.45." If that be true, we might reasonably expect a proportion of attendance to be very large comparatively in North America, where the expenditure is but forty-three cents per scholar. We find the facts are in favor of the old Bay State. Says another, "The evil is in part attributable to bad roads and weather, and the distance which many children reside from school." Let us look to some of the countries of Europe. In Germany, that land of learned men, as well as of brave soldiers, we find by reports that non-attendance is not tolerated, and education may be said to be almost universal. In Sweden, where seventy thousand children travel daily over two miles, and twenty thousand over four miles to school, the attendance is regular and constant, and 97 per cent. of the children are at present receiving a liberal instruction, and a Swede who could not write his name and speak his language with ease, would be looked upon with pity and contempt. We would remark, that in Sweden the vote of the pastor is equal to half the parishioners in the appointment of the teachers. And in Norway, the dean, according to the law, must be chairman of the school board. Other countries might be cited, the result of whose educational systems we should find would compare favorably with ours. It may be said, as these countries are not republics, education is compulsory. Must we admit this to be the solution of the difficulty? Do not the yeomanry of New England attach as much importance to the educational interests of their own children, and will they not make as great or even greater sacrifices for their mental improvement, as kings and autocrats will for those of their subjects and dependents?

School Committee.—ELBRIDGE CUSHMAN, A. H. SOULE, E. W. DRAKE.

PLYMOUTH.

Drawing.—I believe it would be a great public benefit, if some arrangement could be made by which this delightful and universally useful study could be introduced into our Public Schools. Our advancement in the industrial arts is so dependent on the general

diffusion of skill in the various kinds of drawing, that it is that a general interest in it is yet to be created. In all distinguished for mechanical skill and varied manufacturing design are in the highest state of advancement. As matters the life of our State, there is no part of the country where eye and hand is more needed, or where it should be better. On leaving our High School, I observe that almost all have difficulty in getting employment that suits them. They seem to devote themselves to the lower forms of mechanical work, their education has not especially fitted them for the higher, it seems to be nothing left but to cast themselves into the first trade, as soon as an opportunity offers. If drawing were a distinguished part of our course of public instruction, opportunities given for the development of talents which are now wasted, which, if discovered, would indicate the way the poor might take to arrive at fortune. The art is equally advantageous to men and boys. The possession of skill in delineation would open new possibilities of employment to women, which, without it, are not within their reach. To give the art of drawing the place which the interest of the State demands, it will doubtless be rendered obligatory, either by law or custom, on all the schools of the Commonwealth to make this art a part of the instruction in the Public Schools. In order to do this, instruction must be given in all the Normal Schools, and from there it will be carried to the Primary School in the State.

For the Committee.—CHARLES BURTON.

SCITUATE.

It is the natural desire of parents to have their children, between the tender ages of five and ten, crammed with knowledge beyond the edge their little minds are capable of receiving. But this is a mistake. For, as their little muscles become tired by excess of study, so the delicate organ the brain becomes wearied and diseased. Then follows physical debility, thus rendering the children unable to contend with the many diseases incident to childhood, and when they have reached that age when they should appreciate the value of an education, they are either disgusted with books, or find themselves unequal to the task of grasping the subject.

If the time and attention now required for the children could be devoted to the pupil of ten, the fruits of the education would be tenfold, and both would be benefited, for the child would in due time come to his studies fresh and prepared.

wise parent will hesitate to send his child to school before he is at seven years of age.

It always appears to me when I visit a school-room, and see there so many babies who can scarcely talk, as though their parents regarded it rather as a common nursery, where they can send their children and be rid of them for a time, than as a room for imparting and receiving instruction.

Superintendent.—F. T. VINAL.

SOUTH SCITUATE.

School committees are often applied to by very young and often unqualified girls, and by their parents for situations, but we always advise such parents as have the means to be sure and send their daughters, and their sons too, who design to teach as a profession to the Normal Schools, considering not merely their present but their future employment. This is the dictate of even economy, and the desire for large compensation. The demand for Normal graduates is far beyond the supply, and is likely to be for a long time to come, and they usually command much better wages than most other professions. It should be considered too, that every year higher qualifications are being required of teachers, and whoever takes any wise view of the future, in this respect, should qualify herself to meet the demands, getting in youth the best possible education and training. Parents whose children are evidently adapted to teaching, and who wish to devote themselves to it for life, or till they marry, had better give them their patrimony now in a Normal-School education, and the money, in future years—thus helping them to help themselves, and secure all needed prosperity by their own efforts.

Of course, all young ladies who wish to teach cannot get a Normal-School education, though here too, "where there is a will, there is a way"; but rather than to be poorly qualified and so be inferior teachers and thus always troubled to get situations and good pay, they had better fit themselves to excel in some other profession costing less outlay of money. If young women and young men only knew what a surplus there is, in all callings, of only moderately-qualified persons, and what a deficiency of those who are superior, and how speedily the latter are all employed, they would no longer exert themselves much more than they generally do to prepare themselves for the best situations. Taking into the estimate twenty or more rather than five, no young person can afford to enter his life-calling only half prepared for it; and it is being "penny

wise and pound foolish" for men who have ample means from their sons and daughters the education they need.

It should be seriously considered that the primary schools is not to give remunerative employment to y however needy and meritorious they may be, but to children sent to them—to educate them by the instruction of the most competent and accomplished teachers obtained. Still, there are open places for many young yet qualified to teach our mixed and difficult schools, try the experiment of teaching and perhaps meet with Graded Schools are the best for them to commence assistants or in sole charge; or schools from which more and more advanced pupils have been taken by the High yet the fact should not be overlooked by parents, youngest children they send to school, as much need a and competent teacher as their oldest ones do; for "if is bent the tree is inclined"; and the simple ability to elementary branches of our Common-School education is being a sufficient qualification for a teacher of children better afford the luxury of a cultivated and accomplished as a teacher of their little ones just beginning to attend they can afford any other luxury whatever. The results of such teachers for their Private Schools, with the results, and all our towns should secure as many of them. All young ladies too desiring to be teachers, should be ones—superior persons and instructors both.

School Committee.—W. H. FISH, JAMES SOUTHWORTH, LUCY TOWN

WAREHAM.

When schools are suffered to labor through the year without sympathy or encouragement from the community, we are expected as the result of their indifference but abate our good effort, in place of the emphatic purpose and energy which should always prevail in the school-room!

There is too great a tendency on the part of parents to suspicion upon teachers, and to take sides against them on trivial charges of their children. Instead of this, the parents of our schools need and they generally deserve, the confidence and support of those for whom they labor. Investigation ought always to be in favor of the teachers; and no investigation should be made, before deciding against them which they may pursue in conducting their schools.

the importance of this, and of coöperating with the teacher, in respect to the education and government of the school. It is by securing a harmonious and well-ordered school, through each of which the greatest advantages can be secured to the pupils.

Parents should be awake to the educational interests of their children, and act with the same wisdom in reference to their education as they manifest in other matters in which they take a deep interest.

School Committee.—EZRA C. BRETT, BENJ. FRANKING.

WEST BRIDGEWATER.

At a recent session of the legislature an Act was passed, amending that section of chapter thirty-eight of the General Statutes, "so to include drawing among the branches of learning which are by section required to be taught in the Public Schools." In section 1 of this Act, all towns having more than ten thousand inhabitants are required to "make provision for giving free instruction in manual or mechanical drawing to persons over fifteen years of age, in day or evening schools." In doing this, the legislature expressed the views of the Board of Education, expressed by them in a report directly relating to the advantages of general instruction in drawing in the schools of the Commonwealth.

In large towns, where schools are well graded and the classes well graded, the success attending instruction in any department must be necessarily more complete than in towns more thinly populated, and in schools of a mixed character. But there seems to be no reason why drawing should not be taught with good success in many, if not in all our schools. Aside from the artistic talent and love of art which regular instruction in this branch would develop, is the immediate and practical advantage of a well trained eye and hand to the benefit of the community. An accurate and thorough knowledge of drawing, the ability to express correctly real forms, is an invaluable asset in all mechanical arts.

The first requisite to the successful introduction of drawing is the approval and support of the parents; and we can only prove by actual experiment how far it will become a practical success in our ungraded and perfectly graded schools.

The public generally demand of teachers "interesting" schools and "interesting" examinations, and gradually teachers in acceding to these demands fail to recognize the higher demand of absolute right. However faithfully the teacher may drill pupils in writing or spelling, the results of his labors are neither specially attractive nor evident to

the superficial observer. And yet what two branches of School education are of greater importance? A legible handwriting and perfect orthography, are acquisitions as rare; and acquisitions which should be placed within the grasp of every scholar, and placed in such attractive and happy surroundings that every scholar shall be enthusiastic to gain these prizes of persevering labor.

Foremost among the Common-School studies taught with practical success, may be placed English grammar and composition. So long as the majority of girls and boys "hate" grammar, it is safely inferred that the present methods of teaching (with few exceptions) have radical errors. As soon as scholars find that grammar has any province in their every-day life, that it is applied outside the sentences they puzzle over in the book, they neither study grammar because they "must" or "hate" it, nor do they must.

Composition, which in every school should be made a regular exercise, is generally regarded by long-suffering pupils as a device of hard-hearted elders. And truly the common practice requires "bricks without straw."

There is no scarcity of ideas among school children, but a very natural lack of ability to express their ideas. Why, then, to write creditable essays with absolutely no previous training in the art? The idea of requesting a scholar to produce a composition, under similar circumstances, would be universally regarded as absurd. Children must be taught how to correctly express their ideas. They must have good models of the correct expression of their ideas which they can comprehend. To attain perfection there must be a standard of perfection. Once acquainted with the principles, pupils must be trained to accuracy and neatness in writing their letters or essays, till they are without radiance. If intelligently pursued, this subject becomes one of the most useful and interesting studies in our whole course of school instruction.

However clear the perceptions of the teacher regarding the conditions of his position, and however conscientiously he may perform every duty, it will be well-nigh impossible for him to create in his pupils a healthful and growing interest in school studies without the hearty sympathy of the parents in his work. Children are shrewd observers, and when they perceive that their parents regard the school with indifference, they naturally give no very positive endorsement. Thus home apathy to the interests of the school frequently becomes one of the most discouraging obstacles which the teacher has to combat.

ture of parents to visit the school where their children are
acted, though unjust to the teacher, is an act of far deeper injus-
to the children. Good teachers are always glad of friendly sug-
ns and never fail to profit thereby. Teachers of youth and
erience, though of the best intentions, may be actually wrong in
reatment of certain children, from inability to understand their
arities and needs; and it is the province of the parent or guardian
tify these errors of judgment to which all humanity are liable.
e spirit of the teacher pervades the school-room as the spirit of
arent the home, and however great the disadvantages under
he labors, it is impossible to conceal the beauty of an earnest,
felt desire to give, which animates every conscientious teacher,—
re to give from the best of the mind, and heart, and soul, to the
er brothers and sisters in his charge. Equally impossible is it
guise the narrow, sordid spirit which accepts its work as a profit-
nd necessary incident of life, finding its only reward in the pro-
ve draft upon the town treasury.

Superintendent.—MARY A. THAYER.

SUFFOLK COUNTY.

BOSTON.

Composition.—In harmony with the suggestions of the programme
ference to the study of grammar and composition, it is well to
ve, that it is a matter of the greatest importance that an early
be acquired of committing our thoughts to paper. This should
e of the first objects of a school education.
e pen has greater influence in regulating the mental powers than
n language, because, in writing, order is required in combining
ranging our ideas. But another reason for making composition
ly part of our school instruction and study is, that if it be not
enced before the age of twelve or fifteen, it will be very difficult,
impossible, to acquire the art of writing our language with ease
elegance. The reason of this is obvious. The child begins in
y earliest years to speak and think at the same time. It is
the necessity of doing both at one and the same time. So in
g, the mind has in fact to perform two acts at once; and it can
do this well unless it begins very early, and by patient and per-

servering practice acquires a well-established habit. easy to think and speak at the same time, while the attempt to combine the motion of the pen with the thought, all becomes confused, and they fail to accomplish what they most earnestly desire.

"The only reason to be assigned for this deficiency is, are not early taught to put their ideas on paper, so as to perfectly the association of the process of thinking and that of thinking and talking." When the practice of considered in this light, it assumes an importance as a second to none in the whole course of intellectual educa

Study of the English Language.—Again, the study of language is as valuable a means of mental culture as any other language. It calls into exercise the same powers in the same manner. It tasks alike the judgment and demands a knowledge of the rules and principles of every one who would express his own thoughts, or thoughts of others.

In teaching reading and its kindred branches, grammar, the reading-book is of course that on which in a large measure the powers of the pupil are to be exercised and his progress measured. The selections should be adapted to the capacity of the pupil. It is not meant by this, such selections as can be very easily read, but because there is, there can be, no advantage in having a child read mere words and babble over what they already fully understand.

The most advanced scholars, such as are found in our should be made familiar with the best specimens of literature. This is necessary in order that the mind may be in a wakeful activity. This is as necessary as it is "that a young man should be brought up in good society, if we would have them acquire good deportment and polished manners." Especially should they be taught to understand and appreciate the works of our great authors. This cannot be too earnestly pursued. A great point is to teach the pupils to interpret the thoughts of a good author, and to be made to feel their full influence. Their reading will then be a mere mechanical effect, and will become an intellectual effort which they should be required to give and put

Place in the hands of scholars the productions of the
minds,—productions which contain what is lofty in
pure in thought,—if you would bring their sentiments
taste to a high degree of refinement. Manifold are the
of having the mind employed upon subjects so agreeable

methods of education have not considered the study of our language, as connected with the common affairs of life, as furnishing subjects for conversation, or as a preparation for acting in life with dignity and propriety.

The committee insist upon it with satisfaction, "that no study is so useful and important as that which cultivates the taste and creates a relish for whatever is beautiful, proper or elegant in writing. It tends to give vigor to the social affections, it creates a love for the beautiful in nature and in character, it becomes a most fruitful source of mental enjoyment, and if judiciously taught, it leads more directly than any other intellectual employment to a delight in virtuous dispositions and virtuous actions. And thus it becomes a positive influence."

Word to Parents.—The committee cannot leave this subject of education without offering to parents a word of well-meant advice. Parents owe a duty to the schools and to their children which is not often fulfilled. They are for the most part ignorant of what their children are doing in school, and do not understand and appreciate the influence there exerted upon them. It is sad to see how thoughtlessly easily children are given to the care of teachers, as if by so doing parental obligations were fulfilled. No wonder scholars become impatient of school instruction and are hard to control. They see how indifferent is the desire of their parents in regard to their best interests. This should not be. The influence of home should be tributary to that of the schools. Parents should visit them to witness the conduct and progress of their children. This is necessary, that in the quiet of domestic life they may be prepared to supply what is defective, to correct what is wrong, to confirm what is valuable in the course pursued at school." Such visitation will not but result in good. It would secure an interchange of thought and purpose eminently desirable, and lead parents to rely upon the judgment and good intentions of the teachers. It would enable them to become acquainted with the duties and difficulties of school management. A very important consideration is, that such familiarity with the schools on the part of parents would tend to make them prudent as to the matter and manner of what they say at home in regard to the teachers.

A word is necessary in regard to health. Care is taken in our schools not to injure it; and if the health of scholars fails, this may be owing so much to hard study and close confinement in the school-room, as to the thoughtlessness of parents in permitting them frequently to attend parties or places of evening amusement. Proper endeavors to promote health are not so much needed as caution

BOARD OF EDUCATION.

regard to indulgences sure to injure it. Debility and peculiar attention. But in the case of children generally, early hours, pure air and proper exercise are all that counts, if your son or daughter has pale cheeks, languid body and a nervous habit, see if it be not owing to the atmosphere of brilliantly-lighted and crowded rooms, or to other exciting and exhausting causes, rather than the hard discipline of the school.

Girls' High and Normal School.—The fundamental principles which govern men in their preparation for the various professions should regulate our conduct in regard to the preparation of the women to be the teachers of our Boston Schools. A Normal School, distinct from the High School, should be established for the purpose of preparing the daughters of the citizens of Boston to be better teachers than can now as a general thing be found in our schools. "The deficiencies which are frequently occurring, and thus greatly diminishing the efficacy and usefulness of our Public Schools." You are now admitted to this school who intend to make teaching a profession, and who have reached the standard of attainment required for the part of the graduates of the High School.

The course of study and instruction should comprise a general review of the studies taught in our schools, the object of which should be to give the pupil a knowledge of the best methods of teaching the essential elementary branches—knowledge methodical and systematic, adapted to the wants of teachers. Its aim should be to inculcate the subject the severe, patient and persevering study which is required; to open to the mind new fields of knowledge; to strengthen all its faculties. Such use should be made of text-books and manuals as will enable the pupil to "teach the subject to others," by a thorough familiarity with the subject to be taught. The best methods of teaching and of government should be discussed as themes for discussion and instruction.

Such a system as we have in mind, only the outline of which is developed in this report, would secure in an eminent degree in those trained under it, "freedom from irritability; calmness; patience not weary of attending to minute details; and steadiness of purpose never deterred by importunity, or teased by importunity from a right discharge of duty,"—qualifications essential to a teacher.

No one pretends to doubt the value of having a clear idea of what are the objects of first importance in education. It is not with persons tolerably qualified as to mere mental attainments, but whose inefficiency as teachers is apparent.

is often owing to their ignorance of the wants of children,—wants which are as boundless as their immortality; to their ignorance of the laws of mental development; to a lack of acquaintance with the principles and modes of teaching and of government, and also of the proper appreciation of the work they have undertaken to perform. A thorough course of distinct Normal training will, in a good degree, supply such wants, and no other course can. The pupils of such a school will be found able to adapt means to ends, and to do what they have to do as well as possible. Caring for the young when life is its purest and happiest, they will feel they have assumed a sacred mission. They will always be ready to bestow much time and study in careful preparation for a successful discharge of their duties. From their observation and experience, from their acquaintance with the work of teachers, the committee are led to remark—and there is no question as to the truthfulness of the remark—that as a general rule, those who have received their education at our Normal Schools are our best teachers. They “see that teaching has much to effect beyond the present hour,” and that excellence in teaching consists in giving direction to the mind and heart of the pupil as will tend to secure his best interests. They have habits of invention, of self-reliance, and self-government; they appreciate the relation they sustain to the welfare of humanity. What they do is the result of design, the consequence of a well-directed plan, and wisdom appears in all their works.

It is also important to suggest that many would be found in the Normal School who could not afford the time to pursue its full course, but would desire to avail themselves of the privileges of the Normal School, after one or two years' study at the High School. Such pupils, if they give evidence that they may be able to teach well, should be allowed to do this, and prepare themselves to teach in the Primary Schools and lower classes of the Grammar Schools, while those who desire to pursue the full course at the High School should be allowed to do so. The Normal School should be graded so as to meet the wants of all who may desire to become teachers. Thus in the Normal School there would be no privileged class.

At the head of such a school should be a man of experience,—one who would not need to lay down certain rules and regulations, and who would not rely upon paper in regard to any department of such an undertaking. He should have in his mind plans and methods which have produced good results, which are beneficial and remarkable, and which show that he is worthy of confidence and a liberal support. His system, if peculiarly his own, should be a system not just thought of and devised, but the result of observation and experience. It should

have the sympathy of educators and the confidence of the public. He should be one who would have a high appreciation of the value of preparing others to teach. Thus would he sow the seed of truth and correct principles, and exert an influence in the home and the school salutary to the social, civil and religious interests of men and women, to be felt to future generations, and tell upon the destinies of the world forever.

Primary Schools.—A brief notice only can be given of the other schools. A citizen of Boston, a gentleman of high character and sincerity, for many years a member of the Primary Board, when it existed as a distinct body, visited in 1856, in company with his friends from Scotland, several of our Primary Schools. He has since again visited several of the same schools, with the same object, and they all remarked with surprise the change and improvement in the classification, instruction and discipline of the pupils, and in the bearing and influence of the teachers.

These schools have received direct and uniform supervision from the superintendent. He has seen them under favorable and unfavorable circumstances, on pleasant and stormy days, and at all seasons of the year, and has learned their condition and wants. He has met the teachers and made known to them what was wrong, and what was defective or wrong; the effect of which has been to create a more eminent degree, unity of thought and action, and awakened a more united and purpose to pursue a course which promises ever some improvement. Mention is here made of some of the improvements in the instruction of these schools. A complete "programme of studies for the primary classes has been introduced, defining with distinctness the work to be done by each teacher, and thus greatly increasing the efficiency of her instruction by providing a standard by which her work could be, to a reasonable extent, tested." Desks and comfortable arm-chairs have taken the place of the arm-chairs in use many years. "Blackboards," most important helps to progress, have been introduced. "primary tablets," designed to facilitate instruction not only in reading, but also in most of the other branches taught in the primary schools, have also been introduced.

Systematic instruction is given in vocal music, under the supervision of an accomplished teacher. Physical training and vocal gymnastics are features prominent in these as well as in all our schools. The systematic effort to secure "the health and vigor of the school children, the carriage of the body, proper habits of breathing, also of the voice, good reading, speaking and singing." These efforts are all improvements and steps in the right direction, and there

ever that the Primary Schools are accomplishing the purpose for which they were established, quite as well as those of higher grade.

The teachers of these schools have to do with the young when life is brightest and happiest. Let them appreciate this, and remember how closely they are bound to their pupils for good or for evil. Let them consider the influence of character. Let them consider that the force of character, by the blessing of Heaven, may be within the control of the will, but that the influence of character itself is beyond control of the will.

What a teacher is, is ever photographing itself upon her pupils, she cannot help it. "If her heart glows with love, its warmth radiates." "If she is selfish and cold, the cold will chill the air around." She may not think of this; she may even be unconscious of it; but it cannot be questioned. "The instructor who loves his work and is loved the best, will commonly prove to be the most efficacious."

Evening Schools.—Many of these schools are accomplishing their purpose well. In their organization, management and cost, inexperience is at first a hindrance to complete success. Still, the citizens of Boston will be glad to know that hundreds of boys and girls, children of orphanage, intemperance and want, have found in them an asylum to which they may retreat from the storms with which the sky of their youth is overcast. Were they not in these schools they would be in the streets, exposed to danger, vice and crime. Men and boys, women and girls, whose education has been neglected, and who have no work during the day, are regular in their attendance and quiet and attentive to their studies. One school shall be noticed. This school begins on the first Monday in October, and continues six months. It consists of a male and female department, and holds four sessions each week, two for each department. Many of the men have attended several evenings each week. Both departments have been as orderly as any of the Public Schools. The teachers have expressed their pleasure and satisfaction on this account, and have devoted themselves to the interests of their pupils. Many of the boys and girls, as well as adults, have made progress in their studies, alike creditable to themselves and to the school. They are among those who have attended the school regularly for two or three sessions, and have so given themselves to study as to receive the confidence of all most interested in them. Others have learned to read and write, who did not know the alphabet well, and who could not use the pen when they first entered the school.

The Evening High School for males and females has been a great

success, and hundreds have received the benefit of its influence in instruction.

Schools for Licensed Minors.—Two schools for licensed minors were established three years since. Boys licensed to sell paper and black boots on the streets are admitted to their privileges. Under the care of teachers well qualified for the work, these schools have accomplished good results. The boys are not only taught many of the branches usually pursued in our Primary and Grammar Schools, but also lessons in morals and good manners. Many of the rude and neglected have been the most punctual, and any one familiar with them could not fail to see how much they have been aided and benefited by the disinterested and faithful instructions of intelligent and devoted teachers. The committee feel confident that these schools will continue to be a success, provided the proper officers are earnest and faithful in looking after and caring for those who are disposed to violate the city ordinance in reference to "Licensed minors."

Superintendent of Schools.—The proposition to appoint a superintendent of the Public Schools of Boston was discussed in the council, and in the school committee, for several years before it was adopted. The papers of the day entered fully into the consideration of the subject, and the public mind was deeply interested. After mature deliberation the office was instituted by the school committee in April, 1851; and on the 13th of May following, the first superintendent of the Public Schools was elected. The office was instituted with the belief that "it would add greatly to the efficiency and usefulness of our Public Schools." Twenty years of its action have shown that this was a wise judgment. The present incumbent has occupied his position for nearly fourteen years. During this time of his connection with the schools many important changes have taken place. The Primary Schools have very decidedly and probably felt his power, as the instructors and committee well know. Their condition has been improved, not so much by great and marked events, as by more unnoticed and constantly recurring changes for good.

Much is due in other respects to the influence of the office. It is a source of information to teachers, to parents and to the community. It helps more than anything else to model our schools, and affords comfort and strength to those employed in them. It forms and deepens a general interest in education by the able reports which it sends forth. The influence of the office has been to advance public instruction, not only in our own city, but throughout the State and country. Its reports—the only source from which can be learned

the condition of our schools—are published and highly appreciated in other lands. To these we are indebted for much practical knowledge, for better sentiments on matters of school instruction, and for many things which, as steps to future progress, or important as an end and principle, lead to eminence and usefulness. These reports are themselves evidence of the truth of what has been said.

Committee.—LORING LOTHROP, *Chairman*; GEORGE D. RICKER, WILLIAM POPE, HODDY MERRILL, SAMUEL G. BOWDLER, JOHN S. H. FOGG.

Dorchester High School.—The school is organized on a plan somewhat different from that of either of the other four High Schools of this city. It was established as an ordinary town High School, for both sexes, in which boys are fitted for college, and in which both boys and girls are instructed in the higher branches. Its programme, therefore, has always included a classical course, as well as the usual routine of French, German, mathematics and the sciences. Its regular course is completed in three years, but a fourth year's study is provided for those who desire to continue longer, and diplomas are awarded to those who are graduated in each course. While the plan of study, which is a combination of those adopted in the Latin, the English High, and the Girls' High and Normal Schools, has some disadvantages in the greater variety of the objects to be attained, it also has some manifest advantages. It is not always that a boy entering the High School to fit for College, is found, on actual trial, to be physically and mentally qualified to realize the ambitious hopes of parents. Then a change from the Latin to the ordinary High School becomes necessary, involving a sacrifice of pride and even of self-respect, which is prevented in the common New England High School, where, without being obliged "to get the hang of a new school-house," he may quietly adapt himself to the new circumstances by simply dropping his Latin. The altered financial circumstances of parents may sometimes render this facility of change desirable. On the other hand, it occasionally happens that young men, as their faculties begin to mature, develop a degree of industry, energy and intellectual ability whose existence was not before suspected. In a school on this plan, such a young man may add the classical course to his other studies, and prepare for College without disturbing the associations and the harmony of existing school relations. Examples of both these cases have occurred in the experience of the Dorchester High School.

Chairman.—WILLIAM T. ADAMS.

The spelling-book is the symbol of popular education and justly for it is the first word-book, and words are the medium of all teaching. Normal Schools would do a good thing if they would teach their pupils how to use the spelling-book in the school-room. The greatest blessings are liable to the greatest abuses. No school-book in these latter days has fared so hard as the dear old spelling-book. In the first place, the book-makers have metamorphosed it into an ugly shape. Most modern spelling-books that I have seen ought to be entitled "Spelling made repulsive." But the great antagonist of the Speller has been the modern educational maxim, "Ideas before words," a maxim which is good within certain limits, but which is bad outside those limits.

But the spelling-book is probably destined to a great longevity. The witty description of it, as a collection of nonsense columns, has done much to cause its neglect for a time. But that *bon mot* has lost its power, and the spelling-book is regaining favor. Still, there are those who regard it as a necessary evil. For one, I value the spelling-book, and its right use in school I regard as very important. The reading of the spelling-book as a preparation for study, and to a certain extent a substitute for it, is working well where it is well done. I do not like much simultaneous reading, or pronouncing by the teacher for the pupils. If a pupil in his turn fails, the class might be called upon. By reading is meant spelling on the book,—naming the letters and syllabifying. The skilful teacher slides rapidly over the words, or omits them altogether, and gives the time to the harder words, not the hardest list, until all the rest have been gone over. What a waste of time to set a pupil to study a spelling lesson, full of words of which he cannot pronounce! It should be remembered that pupils learn spelling mainly by practice, and not by studying lessons assigned. The teacher who would get along well with the spelling-book, should occupy much time in reading and spelling lessons, and little in study, and not be annoyed by failures in the early stages.

Those schools pleased me best in arithmetic where most attention was paid to practical questions. In nearly all the lower classes far too much time is spent on questions involving large abstract numbers. It is a wretched waste of time to keep young children a long time on the addition of long columns of large abstract numbers. Addition is a mere mechanical operation, and does nothing towards making pupils intelligent on the subject of arithmetic. How long should the pupils in the sixth class be instructed in numeration before they begin addition? About fifteen minutes. The instruction in writing and reading numbers should be taught incidentally, as they seem

needed. If you admit the absurdity that you must begin addition dictating numbers as high as hundreds of millions to be added, that that numeration must first be taught. The aim in teaching arithmetic should be to make children intelligent on the subject, and the best way to do this is to give them plenty of practical problems, adapted to their ability, and then afford them the requisite assistance in solving them, and no more. The text-book is of not much use where the teachers are competent, except as a repository of appropriate problems. In our Boston schools there should be no teacher who is not capable of teaching the subject of arithmetic without relying upon the book.

I love to see order and beauty, and therefore I am pained to see a lower kind of order and beauty sacrificed to a lower kind. Pupils seated according to their size present to the casual observer a pleasing spectacle. If one desires to see an order and beauty of this sort, on a large and splendid scale, he can see it in one of the great schools in New York. I saw there in a fine hall a thousand pupils arranged on their settees with the strictest regard to their height. The effect is charming. I see a tendency to imitate this spectacle on a small scale in our school-rooms. But where this is done, a true and useful order is sacrificed to an order of no practical utility to the children. They are not sent to school to be made a show of, but to be instructed. There is great advantage in seating pupils according to their character and temperament. The nervous, active, excitable pupil should be seated in the back part of the room, while the sluggish and lazy should be as near as possible to the teacher. The short-sighted child, of course, be seated where they can see the blackboard. Reason, judgment and ingenuity should be used in placing the honest and the dishonest pupils in appropriate places. All this is not to be done to the pupils. It is not necessary, in most cases, that the pupils should know the teacher's reasons for assigning their seats. It is enough if they have a general confidence in the teacher's endeavors to do the best thing for all. The pupils of a school are seated in the order where they are arranged solely with reference to their discipline and instruction. This may seem to some a small economy, but it is the sum of small economies which produces the grand results.

Experience in Teaching.—The increase in the salaries of our teachers at the beginning of the second year of service is intended, probably, as an equivalent for the experience gained. I do not object to this provision; its aim is obviously just and proper. Why should an apprentice be put on the same footing with the skilled workman? It is practically very difficult, in a great system of schools, to pay out the stipend of teachers in exact proportion to the value of

their services. Were the salaries to be graduated according to the progress of teachers in acquiring skill, what a metamorphose would the pay-roll have to undergo! Some teachers would get increased pay each month, and some, I fear, would very soon reach the maximum.

It is obvious to the most superficial observer that the value of experience is not measured by its length. I am told, as a recommendation of a certain teacher, that he has had ten years' experience. But, I ask, has he had ten years' experience in the true meaning of the word; or has he merely floated with the current, mechanically doing to-day what he did yesterday, the same old thing over and over again, discarding no errors, adopting no improvements? What proofs, tests, experiments, observations has he made? What instruction and enlightenment, what practical acquaintance with his business has he acquired? "To most men, experience is like the stern of a ship which illumine only the track it has passed." To the true teacher, experience is the mind's eye to look before and choose the right path. Bacon's precepts in this regard are pure gold: "In the discharge of thy place, set before thee the best examples, for imitation is a good precept; and after a time set before thee thine own example, to examine thyself strictly, whether thou didst not best at first. Not only the examples of those that have carried themselves ill to the same place, not to set off thyself by taxing their memory, but to direct thyself what to avoid." Roger Ascham, the author of the first, the best, and almost the only educational classic in our time, gives us the brightest example in his own practice and the precepts in his books. His experience was so fruitful, because he was enlightened by so much knowledge. He knew what Plato had taught him concerning the principles of his art; he knew well what the wise Greeks and Romans had said about education. Summing up the doctrine of experience, he says: "Surely, long experience profiteth much, but most, and almost only, to him that is diligently instructed with precepts of well-doing. Learning teacheth more in one year, than experience in twenty. Every craft and science consisteth in two things: in knowing of his craft, and working of his craft. For perfect knowledge bringeth a man to perfect working." The doctrine is implied in Chaucer's well-known verse, which paints the true teacher in nine happily chosen words: "Gladly would he learn and gladly would he teach."

The more liberal the teacher's education, the more skill he acquires by experience. On the one hand, he is more able to deduce general maxims from the facts which come under his observation, and on the other hand, he is more capable of applying general principles

practical business in hand. Some teachers would have us think that their success, such as it is, is wholly due to their own unaided experience. They plume themselves on their originality. They neither read educational books, nor visit schools, nor condescend to mingle in professional debates. These teachers are not to be envied or imitated.

But here is another teacher who is picking up all good things that other teachers know, and is reading what the wisest educators are saying, and is ever pursuing some branch of learning or science. To this man, experience is like the head-light of the locomotive, which illumines the track far before it. The teacher's library is not a bad index of the value of his experience. What books and pamphlets has he felt it necessary to buy, and what does he read?

Truancy.—The city is divided into ten truant districts, one truant officer being assigned to each district. These officers are appointed by His Honor the Mayor, and they are expected to give their whole time to the investigation of cases of truancy reported to them by the teachers of their respective districts, and in securing the attendance of absentees; that is, children whose names are not enrolled in the schools, and who are, therefore, not technically known as truants. Eight or ten years ago, I submitted to the board two special reports, embodying a history of the legislation in this State and city in respect to truants up to that date, and giving a detailed account of the whole machinery of the system as carried out in Boston. Since that time the number of officers has been increased in a greater ratio than that of the increase of pupils in our schools, so that they are able to render more assistance to the teachers in securing attendance. The system is working at this time, on the whole, very satisfactorily. The officers are efficient and faithful. Having been acquainted with the operations of the system from its origin, it is to me very evident that the success of the system depends almost wholly upon the character of the officers. To insure the highest success in his useful vocation a truant officer must be not only faithful and efficient, but humane and benevolent in his disposition.

It should be distinctly understood by teachers that the responsibility of preventing truancy does not rest wholly or mainly with the truant officers, but with themselves. By kind, firm and skilful management of their pupils, they are expected to maintain a fast hold upon them, and to create and keep alive among them a wholesome public sentiment in favor of regular attendance, and against absence except for good cause. The services of the truant officers are not to be regarded as a substitute for the efforts of teachers to prevent truancy, but only as a supplementary instrumentality, to be employed in reaching the cases which the teachers are unable to manage alone.

The two items which seem to me more interesting than any are those of attendance and expenditures. These two elements of the system have an intimate connection with each other. It is obvious enough that the larger the number of scholars to be taught the greater will be the expenditures, the other conditions being the same. But I have in view another relation between the cost and the number in attendance, namely, the effect of liberal and judicious expenditures upon the aggregate attendance. This relation of cause and effect is strikingly illustrated by the history and condition of our school system. It appears that the whole number of children in the city in the month of May, between five and fifteen years of age, was a little above forty-six thousand, and that the average whole number of pupils belonging to all the day schools, during the year, was about thirty thousand. The precise ratio of the average number of pupils belonging to all the day schools to the whole school population, is seven and six and four-tenths per cent. No other large city in the country shows so high a percentage of its school population in attendance at school. From this fact it may be inferred, I think, that no other city has a system of schools which so nearly meets the wants of all children of its citizens. To one who understands the matter, it is plain enough that this success of our schools is due very largely to the wise liberality with which they have been maintained. Foreign educational inquirers are often struck with the large amount expended on our schools, and ask how it is that the people pay so largely and so cheerfully for this object. But when they visit the schools, and see that our system is no pauper system maintained merely for the children of the indigent, but that it educates the children of the well-to-do class as well as no less than the children of the poor, that it provides instruction enough for all and free to all, they find the explanation of the phenomenon. The great mass of the tax-paying citizens send their children to the Public Schools, and hence they favor liberal appropriations for school purposes. If ever the time shall come when the children of our tax-paying citizens shall be found generally attending Public Schools, then the Public Schools will no longer be our pride and strength; they will then be conducted on a low scale of expenditure, and becoming cheap schools they will necessarily become attractive to both poor schools, and schools for the poor.

In elementary education, there is little or no room for choice with respect to the subjects of instruction. The course must be substantially the same for all pupils, whatever may be their destination in life. With secondary education the case is very different, for secondary education has two very distinct and well-defined functions: namely, (1), to serve as a preparation for a liberal education; and (2), to

supplement to elementary education, preparatory to some occupation or craft not requiring a higher or liberal education for its pursuit. And then the pupils who desire to supplement their elementary education without going so far as the university course requires, are divided into different classes and have different educational wants. Some require but one or two years for secondary education before being apprenticed to the handicraft or trade which they have chosen, and others, on the other hand, have four or five years for the secondary education as a preparation for a mercantile career. And again, others are prepared to fit for admission to a school of applied science, where the aim is to form men skilled in the practical professions, rather than men of liberal and liberal culture. Then the sexes, it is believed by many, require somewhat different systems of training, after passing the elementary grade. Now, it is desirable that the classes here enumerated, and others, should have the kind of instruction precisely adapted to their respective wants. With the view to provide for such wants as far as practicable, many High Schools elsewhere have been organized with two or more optional courses of study; and where a municipality is not populous enough to justify the support of more than one High School, such an organization is perhaps the wisest arrangement that can be adopted. But in a large city like ours, where there are enough High-School pupils enough for several large schools, the better policy, undoubtedly, is to maintain schools differing in their objects and courses of study, instead of attempting to meet the wants of every description of High-School pupils in a single school of vast proportions and numerous departments, or in a number of smaller schools of a uniform pattern.

As a matter of fact, we find that wherever education advances the number of educational institutions are multiplied. This is the law of educational progress. The city of Berlin affords a good illustration of this law. No city surpasses it in educational advantages; and no city has a greater variety of educational institutions, from its peerless university down to its Kindergarten Schools.

Boston is to maintain and advance her position as one of the leading educating cities of the world, the policy to be pursued is, to multiply the kinds of institutions of learning to meet the new wants of advancing civilization,—to aim, not at excellency in simplicity, but at excellency in variety.

Holding these views, I was gratified to find that the special committee on the High-School education of boys in their recent able report, were unanimous in recommending the modification of existing schools, especially the Latin School, rather than the consolidation of the Latin School with the English High School, as had been suggested.

That their decision in this respect was judicious, I think there can be no question.

The modifications of the Latin-School course recommended and adopted, are mainly, if not wholly, in harmony with its character and purpose as a school leading to liberal culture. The design of the committee seems to have been to make the course even more essentially liberal than it had previously been; to make it a better preparatory school than it had been, and thus render it more adequate as a substitute for the College, and not to turn it into a technical school, or to make it a composite institution with incongruous functions. What this school have, in the first place, a course of study which shall be as good as possible for the boy who is destined for College, without cumbering it with extraneous and collateral matters, or with branches which properly belong to the College course. Let the pupils who fairly complete this course receive certificates to that effect. If, however, provision were made for a subsequent course of two years, embracing both scientific and literary studies, for the benefit of such students who having finished the preparatory course desire to continue their liberal studies so far, but cannot or do not wish to do this at College,—such a modification of the old Latin-School curriculum, together with the introduction of the most approved methods of handling the studies, would constitute a true and substantial reform; such a modification would preserve all that is sound and good in this noble old school, and add to it only what is in perfect harmony with its original constitution, which happily has been perpetuated for so many generations. Such a constitution as a seminary of liberal culture, in contradistinction to the plan and spirit of such schools as are called, in the modern educational nomenclature of Europe, professional, or technical schools. Such a modification, I apprehend, is substantially the aim of the committee in respect to this school.

Dr. Arnold has very well defined what is meant by professional studies distinguished from liberal studies: "Every man has two businesses: the one his own particular profession or calling, be it what it will, that of soldier, seaman, farmer, lawyer, mechanic, or the like; the other, his general calling, which he has in common with all his neighbors, namely, the calling of a citizen and a man. The education which fits him for the first of these two businesses, is called professional; and that which fits him for the latter, is called liberal. Uneducated parents are usually anxious that their boys should learn the first, while of the second they understand but little. They regard it a waste of time for their boys to study dead languages and sciences; they wish them to be put upon commercial arithmetic, mechanics, book-keeping, penmanship, and industrial drawing;

are right, if their boys have but two or three years to study before leaving the Grammar School. Now, if you provide for such parents only a Secondary School of the purely liberal type, you virtually shut them out altogether from the advantages of Secondary or High-School education, and compel them to resort to private instruction. On the other hand, parents who have themselves enjoyed the advantages of a liberal education, and understand what it is, usually desire the same for their boys; in many cases they prefer the liberal school to the professional for their boys, even if they are not to go beyond it to the College course. This class of parents is very numerous in this community, and if you do not provide for them the liberal classical school, you virtually exclude them from the privileges of secondary education at the public expense.

Our two great Secondary Schools for boys, the Latin and the English High, have long stood as types of the liberal and professional schools, respectively. The latter has not, however, been a professional school in the narrow sense, as it has always had some decided characteristics of liberal culture, especially in the scientific branches; while the former has adhered too closely, it is thought, to the old routine of grammatical drill, and too much neglected the claims of literary and scientific culture.

In reforming and improving these invaluable institutions, profound knowledge of the subject and the exercise of great wisdom are needed. The aim should be, not to try to combine all possible advantages in one school; such a course would destroy the peculiar excellences of each. They are to be improved by a judicious choice and limitation of studies, and not by greatly multiplying the subjects of instruction. The English High School might be rendered more strictly technical in one direction, or more liberal on the other. Modification in either of these directions would be easy and practicable; but would modification in either of these opposite directions be an improvement, except in some not very important particulars? Is a modification in both these directions at the same time practicable? The proposition is very tempting, but I trust it will not be hastily adopted. It is poor economy for a great city to try to make a school carry too much. Instead of making our English High School much more decidedly technical in its character than it now is, I should much prefer to see a separate school established, which should fill the existing gap in the technical direction between the Grammar Schools and the Institute of Technology.

Evening Schools.—These schools, during the last year, were more fully attended and more successful than they were during the preceding year. The establishment of an Evening School in the Pri-

mary School-house in Harrison Avenue, where the higher branches were taught, was an important step in the right direction. Evening High School was under the charge of Messrs. Anderson and Woolson, masters in the English High School, as principals devoted themselves with great earnestness and success to its organization and management. They were ably assisted in the instruction by Messrs. Nichols and Travis, sub-masters in the English High School, and by Mr. R. P. Owen, a very competent and skilful teacher. This school is destined, I trust, to become one of great importance and utility. The whole number of pupils was 142; the average attendance was 88.

Schools for Licensed Minors.—There are two schools of this description, one in North Margin Street, and one in East-street. The average number belonging during the last half-year was 88; the average attendance was 68. The sessions are kept two hours in the morning and two hours in the afternoon. The boys who attend are chiefly occupied, out of school hours, as newsboys and bootblacks; the former attend at the morning sessions, and the latter at the afternoon sessions. The teachers of these schools are faithful and efficient, and they are doing a very good work. It is very noticeable since the establishment of these schools there has been a great improvement for the better in the appearance and manners of the boys who attend them.

School for Deaf Mutes.—This school was opened in September, 1869. It is located at No. 11 Pemberton Square. The average number belonging to the school during the last half-year was 38; it was taught by Miss Sarah Fuller, the principal,—who had been for many years a very successful teacher in one of our Grammar Schools,—and three female assistants. The system of instruction pursued is that of artificial articulation and reading of the lips. This is the system employed at the Clarke Institution for Deaf Mutes, at Northampton. The teachers are working with extraordinary patience and industry, and the results of their instruction have exceeded expectations. Still, it is a question whether it will not be found necessary to supplement the method here used by others, which have long been employed, such as the manual alphabet, or the natural language signs.

Vocal Music.—In this branch there has been greater progress in any previous year. For more than twelve years the common school music have steadily persisted in their endeavors to develop a systematic and complete organization of this branch of instruction. They now have the satisfaction of seeing their patient efforts crowned with success.

On entering the Primary School at five years of age, the child is at once taught to produce musical sounds, and to sing little pieces adapted to his capacity. From this point the course of musical instruction is continued by an easy and just gradation all the way up through the Primary, Grammar and High Schools. There are two features of the system which produce a strong impression upon the minds of competent visitors from other States and countries,—the thorough scientific training imparted to the pupils, and the provision requiring the instruction to be given mainly by the regular school teachers, aided and superintended in this work by a limited corps of professional teachers of music. The system is both efficient and cheap. It is found that about ten minutes a day properly employed, are sufficient to produce most excellent results in this branch. And everybody who understands school economy knows that the time thus devoted to music will not in the least retard the progress of pupils in other branches. For my part, I believe the general progress is the greater for this appropriation of time to music, such is its harmonizing and educating power. As our teachers advance in skill, as our books and charts and other teaching appliances are improved, and as our system of instruction is perfected in other respects, it will be found, probably, that even less time than is now devoted to it may be needed for this branch, and a smaller number of special teachers and supervisors of it. The very poorest singing that I now find in the weakest and most backward schools is better than the very best that was presented as a model only a few years ago. And the improvement in teaching music has very naturally helped the improvement of the methods of handling the other branches. As a general rule, teachers in an elementary school who teach one branch well, teach all branches well.

It is now just forty years since the first movement was made in this city looking to the introduction of vocal music as a branch of Common-School education. How slow has been the progress! So hard is the task to conquer prejudice and to convert conservatism! But the object has been accomplished. It is a great step of progress and well worth a struggle of forty years.

Drawing.—This branch has had a place in our programme of studies for many years, but its progress has been unsteady, uneven and unsatisfactory. The time has at length arrived, apparently, when it is to be placed on a proper footing in all our schools. Public opinion in this community has been turned to the necessity of systematic instruction in drawing in Public Schools, by the results of instruction which have been witnessed within a few years in the Institute of Technology, by the Act of the legislature approved May 16,

1870, requiring instruction in industrial and mechanical drawing, the vigorous movement recently made for the establishment in the city of a museum of fine arts, and by the reports brought home to us from the Universal Exposition at Paris, in 1867, showing the deficiency of art education in America.

It is now understood, by well-informed persons, that drawing is an essential branch of education, and that it should be taught to every child who is taught the "three R's." It is indispensable as an element of general education, and it lies at the very foundation of all technical education. It is difficult to conceive of any human occupation in which education in this branch would not prove beneficial. Everybody needs a well-trained eye and a well-trained hand. Drawing is the proper means of imparting this needed training. Drawing, properly taught, is calculated even more than vocal music perhaps to facilitate instruction in all other branches of education.

Our success, after many experiments, in conducting the instruction in vocal music, has taught us how to manage the teaching of drawing with efficiency and economy. It is evident that the actual class teaching in drawing, as well as in music, can be given by the regular teachers. They will, of course, need instruction and competent supervision and direction. This service can be performed by one or more drawing-masters, with a small corps of assistants. This course, which is the course recommended by the committee, is not only the best for the pupils, but it is best for the teachers; for, in preparing themselves for teaching drawing, their general ability and happiness will be promoted. What teacher would not gladly hasten to avail himself of the gratuitous instruction of a first-rate art-master, as a preparation for instruction in drawing in his own class?

Superintendent of Public Schools.—JOHN D. PHILLIPS.

WORCESTER COUNTY.

ASHBURNHAM.

There is a diversity of opinion in regard to what should be taught in our schools. The majority of our youth commence their school days at six years of age, and continue in school about one-third of their time till they are fifteen, thus making about three years of school attendance. If, instead of one-third, three-fourths of this time were

spent in the school-room, with, perhaps, three years added, it would not be a hard matter to prescribe a course of study. But when there is so much to be learned, and so large a field to select from, and so short a time allowed to our youth, it is difficult to decide just what should be crowded into these three years of school life. We know of no better guide than the saying of the ancient Greek philosopher, Aristippus, who, when asked what boys should learn, replied, "What they will practise when they become men." First and most important are the principles of religion and morality; without these life is a failure. Second in importance, is a knowledge of spelling, reading, writing, arithmetic, geography, grammar and mechanical drawing.

Each one of these should receive due attention. Any one of these should not be pursued to the exclusion of the others. We find many boys in our schools who are, by the request of their parents, making arithmetic their principal study, sometimes to the exclusion of everything else. When requested by the teacher to take up geography and grammar, the reply almost invariably comes, "Geography and grammar don't do no good."

Frequently the child is armed with the authority of his parents in making this reply. Here is a conflict of authority that is exceedingly unpleasant to those having these scholars under their care. Geography, grammar and mechanical drawing, can be studied at the same time without any detriment to the arithmetic. We find that those pupils who have a variety of studies are as well advanced in arithmetic as those who make arithmetic their only study.

We notice when we visit schools, that the child who has a slate and pencil has an inclination to draw something; only let this inclination be trained, in the right direction, and the child may become an artist who will honor the profession. If he does not become an artist, he will acquire a knowledge of symmetry and form, a power to discriminate between the graceful and the ungraceful, the well-proportioned and the ill-proportioned, and a skill of hand which will in after-life be considered invaluable. It is well known that in all kinds of mechanical pursuits, skilled labor is in great demand, that the pay a skilled workman commands is double that of the unskilful. A young man who enters the workshop with a knowledge of mechanical drawing will acquire skill in a few months that would otherwise take years to acquire. It is hoped this subject will receive the attention in our schools its importance demands.

School Committee.—W. F. WHITNEY, N. EATON, G. C. FOSTER, A. JEWETT, R. PUFFER.

ATHOL.

Vocal Music.—We have encouraged singing in all the schools. The Depot Village and Pine Dale schools excel all others in this branch of culture. Those who have been present at examinations, and who have visited the schools, can testify to the great value and importance of this practice of the art of singing. The children are happier and the school-room is made a more pleasant place. We cannot afford to lose the influence of song as a means of culture. The noblest sentiments and emotions of the human heart find their truest and most impressive utterance in song. Children love to sing and grown people do not sing enough. Singing is appropriate everywhere—at the wedding and the funeral, the church, the social gathering, the home and the workshop. The more people sing the less they quarrel, and who is angry if they would sing Old Hundred twice with spirit and life before giving vent to wrath, anger would effervesce in song, and the spirit would at once be calm and serene. Try it.

Drawing.—Bartholomew's drawing cards have been put into all the schools the past year, excepting the higher grades, and all the young scholars have had daily exercises in simple rudimentary drawing, very much to their pleasure and profit as we believe.

Superintendent of Schools.—This is the first year that the town has employed a superintendent of schools, and from the fact that the committee have been authorized to employ a superintendent for another year, we think the result of the experiment has been satisfactory. The superintendent has endeavored to secure competent and efficient teachers, having due regard to economy. In this he has not always succeeded to his satisfaction, or yours, but when we remember that we have had forty-eight terms of school with no very bad failures, we certainly have cause for reasonable satisfaction. Parents have manifested more than usual interest in the schools the past year, which is shown by the large number of visits recorded in the registers, and the large number that have usually attended the closing examinations. If parents will coöperate heartily and earnestly with the teachers, committee and superintendent, our schools will soon be the pride and ornament of the town.

Superintendent.—JAMES P. LYND.

BERLIN.

The injury to our schools, and the wrong done to the youth of the town in withdrawing so many from our very limited school privileges at so early an age, should command the public consideration. If

were to give them additional opportunities elsewhere, we would not complain. But ordinarily, it is only for a pecuniary gain. Such is not to be lightly esteemed, especially when the parent or family have special need of it. But frequently it is only a barter between knowledge and money; in pocket, or "out of pocket," as may be. Openings for labor and pecuniary gain are a blessing to a town; but when improved by the sacrifice of needed mental culture, the gain is not profitable.

School Committee.—W. A. HOUGHTON, WM. BASSETT, E. C. SHATTUCK, JONA. F. WHEELER, FRANCIS RAND, ISRAEL SAWYER.

BOLTON.

Tools to Work With.—A good teacher, a thoroughly faithful and competent teacher, male or female, is one of the most valuable and should be one of the most honored members of the community; and to have such a teacher for its young people any community might well tax themselves to the utmost extent of their ability, and even submit to what, but for such a consideration, would be considered hardships and privations. But essential as the teacher is, we should consider, also, that there are other things quite as essential; we should remember that to effectually accomplish what is expected of him, the teacher must have, along with the good-will of parents and friends, tools to work with, or, in other words, the "furniture," to quote from a former report, the means and appliances with which every school-house ought to be supplied. This is a topic not unfamiliar to such as may have read the reports of our predecessors, but one which, from its importance and the large place it occupies in our minds, we cannot bring ourselves to pass over in silence. It has been a fault with our Yankee style of instruction, however excellent may have been its quality otherwise, that it has been too purely abstract, dealing too exclusively with treatises, principles, rules and processes, and but seldom or never coming in contact with realities of every-day life. Hence it is not, or was not awhile ago, an uncommon event by any means to find even readers of the first class who, if called on unexpectedly to take up a newspaper article at all elaborate, could not read it off intelligently and correctly; and geographers, deep in the science of geography, who could not apply their knowledge to what was right before their eyes, nor locate properly places of which they were hearing in the news of every day; and arithmeticians and geometers who would stand utterly confounded if told to find the cubical contents of an apartment, or name correctly the number of cords in a pile of wood. Now what we mean to say is, that, besides its blackboard, slates,

aps, text-books, every school-house ought to have measuring rods, measures, globes, specimens, which would enable the teacher to give a similar demonstration or illustration of what his scholars were learning from their books. So that no pupil should learn anything as a matter of mere memory solely, not at all or only half understanding it; it should have the thing, whatever it might be, if practicable, presented right before his eyes; so that with the help of a good globe, he would know for himself why the days are longer in summer than in winter, and why in one case there must be more warmth, and in the other more cold; so that, with a scientifically illustrated map before him, like Guyot's, which he had been taught to interpret, he would be able to read off the geographical features of a country, its mountain ranges, river systems, its climates, its productions, almost at a glance; so that with such a map before him, and the description of some observed and intelligent traveller, he would be able to journey over the earth's surface almost as well as if he were actually conveyed through various regions by car and steamboat. And so of many other things which time will not allow us now to speak.

School Committee.—RICHARD S. EDGS, JOSEPH BARBER, ANDREW L. NOUSER.

CHARLTON.

Large and Small Schools.—There are two or three districts which might be consolidated without doing injury to any one. Living close proximity to the school-house does not always make the scholars, nor does it insure punctual attendance. Boys or girls who are early and make extra efforts to be punctual at nine o'clock in school-room, will also see that they are not behind in their studies. Besides, there is the enthusiasm kindled by numbers. It may surprise a range to many who are unacquainted with the workings of a school-room, that a faithful teacher will prefer a school of forty or fifty pupils to one of ten or twenty. Schools are very apt to become dull when the number is small. In a large school the teacher learns that every moment is precious, and will shape her conduct accordingly, and, if she is adapted to her work, become enthusiastic in her profession; and this enthusiasm will likewise extend to the pupils. Consolidating several schools would, therefore, not only save expense, but have a strong tendency to improve the schools, and increase their usefulness.

Two or Three Terms.—A year's experience has fully proved the usefulness of the plan of having three terms—the spring and autumn terms nine weeks each, and the winter term twelve weeks. When the subject was brought again before the voters of the town at

annual meeting in March, there was no opposition made to the measure. The long vacations which usually existed are now shortened, so that the children cannot forget what they have acquired during the term.

School Committee.—J. H. HATHAWAY, EDWARD SMILEY, JOHN HAYEN.

DANA.

The State Teachers' Institute.—The institute held in this town last fall, was, in the opinion of your committee, teachers and citizens who attended, highly beneficial to the cause of education, not only with regard to the very great amount of valuable instruction imparted thereby, but in giving a new impetus and enthusiasm to the cause of popular education, the value of which, to the community, cannot be overestimated.

School Committee.—M. L. LINDSEY, A. J. NYE.

FITCHBURG.

The High School consists of four classes. One class graduates and re-enters each year at the close of the summer term, four years being required to complete the course. Scholars who have completed the full course satisfactorily are graduated and presented with a diploma. Scholars enter the school on passing an examination in arithmetic, grammar, geography and history, together with reading, writing and spelling. There are three regular courses of study in school, either one of which the scholar may choose on admission. If the parents or scholar have no definite choice, such advice is given by the principal in his judgment is adapted to the case. One is the college course. This is mostly classical. The second is partly classical and partly English. The third is wholly English. In addition to these we now have the miscellaneous course. With some one of these courses we think all may be reasonably well accommodated. As system and discipline are essential to success in all schools, it is not desirable to make frequent changes in studies. So that when any course is entered upon either by direction of the parent or by the choice of the scholar, it is not expected that changes will be made without the very best of reasons. This is a matter which should be carefully considered from the outset. The course pursued in the miscellaneous department is determined at the commencement of each term and is made to accommodate the greatest number possible.

School Committee.—ALFRED MILLER, C. H. B. SNOW, GEO. D. COLONY, HENRY L. BLOOD, THOS. S. BLOOD, GEORGE JEWETT.

GRAFTON.

We are glad to have the opportunity to commend those parents and friends who have encouraged teachers by their visits to the school room during the past year and at the examinations. This is as it should be. The bond of sympathy and common interest thus made a thing of manifest existence, becomes a power full of quickening and encouragement. Teachers should not be our only educators. When all parents, guardians and citizens can be made to see that every contribution to the Common School of money or influence, is an act of contribution of wealth to their pockets and safety to their interests, that the Common Schools are cheaper every way than our criminal institutions, and that their direct tendency is to diminish shiftlessness and poverty, then no sacrifice in this direction will seem disproportionate to the compensation.

School Committee.—A. J. BATES, J. W. BIGELOW, J. H. WINDSOR, W. D. WHELAN, D. W. NORCROSS, J. GOODWIN.

HARDWICK.

You want your physician and your minister to spend a long time in study and special preparation for their work; yet the training of your children in the most susceptible period of their lives is often intrusted to those who have never spent one hour of special thought in preparation for that work. It is a very common thing, especially in the rural towns, for young men and women to take situations as teachers for a term or more, not because they have any special liking or fitness for it, but because they have nothing else to do. They have no enthusiasm in it because it is a merely temporary occupation. For this state of things we consider both the people and the teachers at fault. Public sentiment should demand a better class of teachers, and those who propose to teach should make special preparation for that work; then they would become better teachers. Let the public demand Normal Schools, and Normal graduates only be in demand as teachers, then there would be a grand sifting out of those who teach merely for convenience. But Normal graduates cannot be had at once, and perhaps, in the mean time, all who have the requisite natural qualities of a good teacher cannot attend such a school. Such persons can do a great deal towards preparing themselves for successful teachers. They should study, first, to realize the responsibility of their situation; then, to gain a knowledge of the most approved methods of teaching and practise them. Many who act as teachers suppose that because they can work all the difficult problems for the

pupils, and hear recitations from the text-book, therefore there is no need of their studying at all; but this is not the thought of the true teacher. Those who cannot have Normal School advantages should study by themselves and do their very best to understand every principle on which rules and processes are based, and then drill the scholars on them until they understand them as well as the teacher. We would recommend to every teacher to procure some good work on Normal methods of teaching and study it faithfully. "Holbrook's Normal Methods of Teaching" and "Page's Theory and Practice" are as good as any. Make these methods your own and apply them the very best you can, and, if you really enter into the spirit of them, you would be surprised as well as gratified at your own progress, and your increased power in the school-room. This will not relieve from close study, but to the thoughtful teacher it will prove very suggestive. We do earnestly request of our teachers that they get out of the old rut which our grandfathers followed, and forsake those old fossil methods of teaching. They were good in their day because there were no better known; but this is an age of progress.

We would recommend first that the people require the examination of their teachers to be in public, and that as many as possible attend and see for themselves how well the candidates are qualified for the work. This course would not insure good schools, but we think it would be a stimulus to the teachers, and tend to increase the public interest in the schools. Private examinations must, in many cases at least, be mere formalities. The committee cannot always spend two or three hours with a single candidate, and so the examinations are hurried over. But let them be in public, and all the teachers notified to be present; then those who are really in earnest will have a stimulus to prepare for such a test, and others, who would not hesitate to blunder through a hurried private examination, but without energy enough to prepare for a thorough and public one, might think best not to attempt it at all. Again we repeat, let it be demanded that these examinations be in public, and that they be no farce, but that they be a real test at least of the teacher's intellectual ability to instruct according to modern and approved methods.

School Committee.—W. D. BROWN, JAMES P. FAY, WM. A. WARNER, Jr.

HOLDEN.

Then, too, though we pay liberally as compared with what was paid a few years ago, and in some cases liberally in comparison with the value received, we do not, as a rule, pay enough to command the continued services of experienced and talented teachers. Then, again,

the duty of providing teachers is often deferred until just before commencement of the term, when the choice must often be made among strangers, or those who, under other circumstances, would have been accepted. Failure follows. In our cities and larger schools are now sustained not less than three terms, and the teachers are engaged by the year. The result is, that most of our efficient successful teachers find it for their interest to secure these permanent situations, thereby rendering it more and more difficult for communities in the smaller towns, having but two terms in the year, to procure suitable and competent teachers.

Apparatus.—In the report last year attention was called to the meagre manner in which our school-rooms were furnished, and the great importance of the subject induces me to allude to it again. Twenty-five per cent. of the town's share of the State school (\$44.58) has been expended in procuring such articles as were essential in imparting instruction to the Primary department of our schools. These have done excellent service, but have come far short of supplying our actual wants. Every school needs a set of geometrical figures, a full set of the national tablets (we have none now), drawing cards to amuse and instruct the little ones, a good globe and set of outline maps for the improvement of our scholars. A few hundred dollars thus appropriated would be more than repaid in the facilities it would afford the teachers in giving instruction, and conveying a great amount of useful knowledge in a few exercises, and without which their pupils must remain ignorant.

In one school (Miss Moore's) drawing has been successfully introduced, and, while it proved a source of innocent amusement to the smallest, many of the specimens exhibited considerable talent and skill in the larger pupils. This is a new feature, and its introduction into our schools generally would mark a new era in Common School education. It is highly practical. It is one thing to know, and another thing, equally as important, to be able to express what we know to others; and this can often be done more accurately and forcibly by drawings than by words. It brings out and quickens into life a power or faculty latent in the mind of every child, and constitutes education in its truest sense.

Superintendent.—WM. C. METCALF.

HUBBARDSTON.

Teachers and Teaching.—The school is made by the teachers, and matters not how fine the building, how abundant the means of instruction or how efficient the supervision; there will not be a success

school unless the teacher appreciates his work as one who is to teach those under his instruction how to make life a success—how to do and get the greatest amount of good. In order thus to teach them he must consider carefully the ability and need of each of his pupils, and must be able and willing to work earnestly to make each pupil what his Creator intended him to be. Let teachers of experience and education be employed. The more liberal that education, the more skill he requires by experience. Such are able to deduce sound maxims from the facts that come under their observation, and can apply general principles to the practical business in hand. Success demands culture, broad and true. The teacher should have a comprehensive idea of the condition of modern thought in all departments, and the power and learning of a master in that which he assumes to teach. He must be able to go behind text-books and bring out fresh and original conceptions from his field of study. There must also be self-control, and, in fact, the teacher requires the elements of character which belong to a successful military leader—strength, energy, firmness, quickness of perception and promptness in action. Eye, voice and bearing must speak the commander—not dictator, ruling by force—but a superior, who governs by virtue of what he or she is.

School-houses.—Too much attention cannot be given to the surroundings amid which we place our children, if we would give to them symmetrical and finished education. The house should be commodious, tasteful and ornamental, and be kept in the most perfect cleanliness and repair. But some are ready to say that such a course would be most unwise, for it is notorious that scholars have no regard for the public property, and are ever watchful for some opportunity to use their pencils upon the walls and their knives upon the benches, and, beside, windows and doors especially excite their propensity to destroy. Now we are not willing so readily to impeach the character and taste of our children. We think where scholars are notorious for such bad conduct it is because the town is notorious for its neglect of its own property and interests. A boy cannot resist the temptation to start that stone from its bed and set it in motion down the hill, which seems just ready to start of itself, although it may do much damage on the way. So a dilapidated house will excite the mischievous vandalism of thoughtless boys. We need not say the school property, when it came into the hands of the town, was in a wretched condition. Some of the houses were an intolerable shame to the public, and it became the duty of the town officers to make some repairs at once. The first year we were censured for not doing more, the last for doing too much, while it is evident that only a beginning has been made of what ought to be done. The statute makes it

the duty of the school committee, unless the town otherwise directed to keep the houses in good repair; so we were necessitated to do something, and we have done as well as we could. If others could have done better we sincerely wish the job had been in their hands. Now since the school-houses have reverted to the districts, we hope they will vindicate the claim that such a course was necessary, if we would have them kept in a good condition.

School Committee.—PORTER M. VINTON, HORACE UNDERWOOD.

LEICESTER.

Drawing.—Drawing has been introduced into most of our schools in accordance with the school laws of the State. Being a new thing it was attempted at the commencement of the spring term as a sort of experiment. It succeeded well and to the satisfaction of the committee. It is now made a distinct exercise in a majority of the schools in town. It is not only a new but an interesting feature of instruction. There are instances of commendable excellence in this department to be found in the several Grammar Schools, and they develop a talent and aptitude in this respect which doubtless will, if properly cultivated, be of great practical value in time to come.

It is believed, also, that the practice of drawing, whether maps or figures, which is performed without the aid of rule or measure, with only the eye to guide in their construction, has assisted the pupils in the art of writing, which requires special steadiness of the hand in order to attain to any respectable proficiency in this direction.

For the Committee.—L. HOLMES, Chairman. L. G. STURTEVANT, Secretary.

LUNENBURG.

In towns like this, where the custom still prevails of keeping schools but two terms in the year, in the summer and in the winter, the older pupils attending only in winter, and where a regular system of gradation is impracticable, the practice is beginning to prevail of maintaining for one or two terms, fall and winter, a special school for the benefit of those older and more advanced pupils. We are satisfied that such schools, kept in some central place, are productive of great good, for they attract pupils from every portion of the town, giving to them the advantages of instruction in the higher branches during the season of the year when they can best attend. By the withdrawal of the older scholars, the Common Schools retain the same character in winter as in summer, doing away with the necessity of changing teachers with every term. In this simple way, the

stantial advantages of a system of graded schools, as enjoyed by the children of cities and populous towns, may be extended to towns less populous and sparsely settled like this. And we have taken much pains to learn of the results of such schools, and find, to our great satisfaction, universal success and approval. It may be claimed that the committee have no right to establish a school, or schools of this class, but, we beg to say, that since the removal of district lines, if not before, the school committee have full practical control, both in the creation and maintenance of these schools.

School Committee.—C. A. GOODRICH, A. C. ESTABROOK, O. L. SPAULDING.

MENDON.

The superintendent would here record, to avoid misunderstanding, his belief that the true policy of the town is to build plain and economical houses, especially so as regards externals. Let the school-house be neat and neatly painted, and look as well as the homes of the children generally. Let the interior be well fitted up with comfortable furniture. Let ventilation and warmth be well considered; and all needful apparatus, maps, charts and books of reference be always at hand; in short, fit up a place exactly suited for the comfort and convenience of teacher and scholars. All this can be accomplished with small outlay for style, for which our people will hardly feel that they can afford to pay.

The falling off at the north end is partially accounted for by the miserable state of the school-house, and that at Albeeville is due to causes to which allusion will hereafter be made.

No investigation would reveal any lack of interest engendered by the want of district influence in school affairs, but rather in some cases the reverse. Last year three very small schools attained ninety per cent. average attendance for one term; this year five large schools, including the High School and two small ones, reach or surpass this average; while in 1869 but one school barely reached it. In 1863 no school in town averaged eighty-five per cent., and but one the next year attained even this low average.

It would be hard to find a scholar, punctual term after term, growing up to be a man heedless of his engagements, idle, negligent or shiftless. These habits are implanted most frequently very early in life, and often perhaps by parents themselves. They want the children once in a while for their assistance; then the children in their turn want an hour or a day for recreation, which such a parent can hardly refuse. Thus by little and little the golden habit of prompt-

ness, of punctuality, is destroyed, and with it, very likely, all symmetry of the child's character.

So important does this point appear to the writer, that it seems the chief element of success in a school to secure punctuality and continued attendance. Parents must know that whatever the fault or neglect of teachers or authorities, this responsibility is placed chiefly on them. And they must know, also, that nearly the whole penalty for non-attendance must be borne by their children. The teacher may be in fault, but if you allow your child to be absent, that child alone is the principal sufferer. Alas for the parent who will not sacrifice a feeling, an opinion for the good of his child, or who is so blind as to think it best for that child to be allowed, for any cause within his control, to leave school towards the close of a term, or occasionally for a day or an hour!

School Committee.—GUSTAVUS B. WILLIAMS, Superintendent. DAVID ADAMS, CARL BUTLER, JOHN R. HAYWARD, EZEKIEL P. GASKILL, LINUS B. STAPES, EDWARD H. T.

MILFORD.

Education.—The advantages of education are not merely the visible results of knowledge, as an aid of money-getting in special mechanical, mercantile or professional ways. But its best results are those which are invisible, in the culture of the faculties, and the lessons of self-control which it imparts. He who is systematically taught in any branch of learning is not only qualified for the practical work to which it may be directly applied, but is also prepared for other attainments and for other duties. The young woman, who has many years been devoting a part of each day to practice upon pianoforte, has not only obtained instrumental skill, but lessons of self-control invaluable, which will affect her whole future life. The cares of the family and the household, when she shall have been married, may oblige her to omit her old and familiar practice. Her neatness and skill of execution may diminish by neglect; but the work will never lose the influence of the self-control and the definite purpose developed by her youthful exercises.

The moral influences of education justify the largest expenditure of labor and of treasure. With the tools it furnishes it imparts a power and a habit of self-control and of subordination to needful law, which go far to make it the safeguard and the hope of an improved civilization. It is not final in this regard. There are instances of moral corruption, along with refined æsthetic and scientific and literary culture. Religious principle is necessary to develop the highest style of morality. But the observation of the philanthropist satisfies him that

thorough discipline and instruction of youth have much to do with the peace and good order and virtue of the community.

In order that a pupil shall receive these best influences, he ought at least to take the course of our schools, requiring twelve years, from five or six to seventeen or eighteen years of age. If it is said that it is a long time to spend at getting an education, we would reply that the education cannot be obtained in so short a time. That requires a life—an eternity. At school, we propose to lay a sure foundation upon which the edifice of culture is to be built. We endeavor to impart many things for practical purposes directly and immediately useful, especially the science of numbers and facility and correctness of verbal expression. But our course of study aims also to develop mental faculty and capacity, and to prepare youth not only for business, but for manhood and womanhood. And our teachers measurably fail, if they do not, in addition to promoting the refinement which comes from familiarity with science and literature, finally succeed in provoking the habit and strengthening the power of thinking.

We provide good schools, which are yearly improving in efficiency and usefulness; but they are nothing unless the children attend regularly. We call attention to the following facts:—

1. In a populous town like Milford, the schools must be graded,—an advantage as well as a necessity.

2. In graded schools, a course of study is needful for regular instruction and progress.

3. In such schools, it is useless or almost so, for scholars to attend but a small part of the year. For acquiring any knowledge, say, of arithmetic, an attendance during the year with some regularity is a necessity.

In illustration of the last fact, we call attention to the circumstances of the lowest and most numerous grade of the Grammar Schools. For the fall term is prescribed notation and addition; for the winter term, subtraction and multiplication; for the spring term, division. Suppose a child does not enter at the first term, or is absent during the second term; he cannot possibly go on with the study, for want of preparation. Nor can we abandon those who have been in regular attendance, to bring up those who have been absent. As our schools are necessarily organized, they are of no avail to those who are sent to them but a part of the year. And their success is much hindered by the numerous daily absences of those whose names are enrolled. Let parents think of the loss to which their children are subjected when required or permitted to remain out of school.

The laws demand the attendance at school of every child between

the ages of five and fifteen, at least three months in the year. The statute was adapted to the old district system. Such an attendance is practically useless in any of our manufacturing towns. A better rule would be that adopted in Boston for the newsboys and street blacks. These occupations cannot be pursued without a license conditioned upon regular attendance at school for one or two hours each school-day. That is one issue out of the difficulty. We cannot do nothing for a boy or girl one term in a year. Much may be done in one hour and a half each day; far more in the half of each day. The school committee will gladly arrange for such an attendance for those whose labor is deemed needful to the family. Regularity is all-important.

Another remedy might be found in providing an ungraded school for such children as for any reason are unable to proceed with the regular course. Such a school would demand a principal of experience and capability; and as we have now the necessary room, the matter is suggested to the new committee. Something should be done, if possible, to rescue from street influences and utilize the brain power of over one-fourth of our juvenile population, now neglected by our schools.

School Committee.—C. J. THOMPSON, G. L. DEMAREST, M. J. C. RUSSELL, T. W. FLETCHER, H. H. BOWEN.

MILLBURY.

Drawing and Writing.—In conformity with the provisions of the statute of last winter, the committee introduced the study of drawing into our schools, early in the summer term. In the Primary and Secondary Schools, drawing slates were made use of and the result has been satisfactory to the committee. In these schools it is not desirable and ought not to be expected that the scholars will devote every moment of time to their studies. They must have relief, and it is much better that that relief should come from some innocent amusement than from mischievous play, and it has been found that the scholars have been so interested in their drawing lessons, that much of the difficulty of government has been removed. Besides this indirect benefit, commendable proficiency has been attained in the subject, and the first steps in penmanship have been taken at an earlier stage than formerly. In the Grammar and Intermediate Schools the drawing book has been used. Some misapprehension arose in the community as to the right of the committee to introduce this study, and some opposition from parents was encountered, partly because of the expense attending it, but mainly from a failure on their part to see

utility. But the question of utility was not open to us; that was passed upon by the legislature. Nevertheless, we would suggest that that art which induces, and that science which inculcates painstaking, patient and persistent effort, must be useful.

For the Committee.—JOHN HOPKINS, *Chairman.*

NORTHBRIDGE.

With good houses, there must be well qualified teachers; in this respect we have been quite as successful as in former years—the character of each school depending upon the various local influences as well as the individual characteristics of the teachers. Seven of the teachers employed have been educated in our Normal Schools, and fully sustain the reputation which they have acquired. Some of our schools have been taught by trained teachers for several years, and the excellent result of their teaching is too apparent to need any comment from us.

We are not among those who think that no good teachers can be made outside of these schools, or that all who obtain their diploma must of course be successful teachers. In our large Graded and Ungraded Schools of fifty or sixty scholars, it requires, first of all, a teacher of great energy, both physical and mental, for the pupils under their charge to make any satisfactory progress. We have teachers of this class who are not graduates of a Normal School, and whose places it would be difficult to fill. The general reputation of teachers depends more upon their ability to govern, and the good order they maintain, than upon their skill as teachers.

School Committee.—R. R. CLARKE, CHAS. O. BACHELOR, GEORGE BENSON, J. LASSELL, H. GOODELL, WILLIAM WHITIN.

NORTH BROOKFIELD.

We ask of you, and urge upon you, to appreciate the fact that your schools can never supply the lack of home discipline; can never render submissive and order-loving those to whom the propriety and beauty of these virtues are unknown; that the influences of the most gifted instructors even, during the few hours daily devoted to attendance upon school duties, should be expected to have greater weight with your children than continued home influence, is unreasonable. Parents must heartily coöperate with teachers if the good work of education is to progress, and the expenditure of money, labor and time to find vindication in the general intelligence and virtue of the community. It is worse than vain to expect "brick without straw";

let school instruction be supplemented by home training; let the teacher receive the additional strength parental indorsement can give, and disorderly schools are impossibilities, relics of the dark ages, chimeras. Withhold this merely, and you mar your schools by taking from their efficiency; by uttering words of detraction of the teacher at home or in public, you strike blows at the life of your schools by inculcating a spirit of insubordination and disorder as surely as the effect follows its moving cause.

Your teachers have been instructed that expulsion from the privileges of school, as a punishment, is against the policy of the system, and cases in which this action has been found the only resort are rare; in those instances in which it has been employed, the course of the teacher has been found, after careful investigation, to have been entirely justifiable as essential to the maintenance of authority necessary to the successful administration of the school.

A few remarks touching the matter of the exclusion of children from the Public Schools, may perhaps be not ill-timed if indeed they be not especially appropriate and necessary. It is obvious that the schools of the town are established and maintained for the benefit of all the inhabitants. The enjoyment of this benefit then is a common not a personal right, and, like other common rights, one to be enjoyed under such restrictions and qualifications as that it shall not interfere with the equal, co-extensive rights of others. It will be admitted, or at least it cannot be denied, that for misconduct in school and disobedience to reasonable regulations a pupil may be excluded—yet there is no express provision of law authorizing such exclusion; it results by necessary implication from legal provisions requiring school discipline, and proves that the right of attendance is not an absolute and unqualified right, but one to be enjoyed only under reasonable conditions. And by further implication the duty of deciding these issues is cast upon some one. We think it rests upon the town's committee. In some respects the duties of this committee are defined by statute; in others they result from the responsibility of general superintendence. They are required to see that as far as may be the minds of the children are impressed with the principles of piety and justice, a sacred regard to truth, love of their country, humanity and universal benevolence, sobriety, industry and all those virtues which are the ornaments of human society. It may be said that the statute enactment making this enumeration, though commending itself to every man's judgment as right and proper, affords no practical rule which can have the force of law. It does not, indeed, prescribe any practical rule upon which any legal action could be founded. What then is the force of an enumeration of moral duties among statute enact-

ments? It furnishes a light where they are obscure, and a signification where general or indefinite. In the light afforded by these means of exposition your committee deem it clear that your legislators intended the Public Schools to be at the same time seminaries of learning and a system of moral training. If such is the purpose of their organization and support, it becomes the plain duty of those to whom the direction of the schools is delegated, to guard with zealous care that the youth in membership be protected from contaminating influences, and to preserve pure-minded and ingenuous unsuspecting and susceptible childhood, by removing the incorrigibly obstinate and turbulent offender, even though no offence known to the criminal code be committed. Nor can it, in any right view of their obligations, be incumbent upon the committee to lodge any offender whom they may have excluded from a school in State institutions. Supposing such to be the proper disposition to be made of an offender, we are not convinced that this fact argues any peculiar fitness for his membership in a Public School.

A pure and worthy character is as essential to success in life as are mere intellectual triumphs. Let the teacher impress this fact upon the mind of the scholar, and render the school-room an arena for the achievement of moral as well as intellectual victories.

Important as are the reasonable rules and instructions of the teacher in securing a healthy tone in the school-room, there is another and still more potent influence. We refer to the teacher's real character as evidenced by his daily walk and conversation. It is his unconscious influence, his spontaneous words and acts which form the paramount moral tone and determine the character of the school. It is a force no hypocrisy can control, no simulation effectually disguise. It behooves, therefore, the teacher most carefully to consider what manner of man he be.

The mind of childhood naturally comprehends only isolated facts; it deduces principles from known facts but slowly. It follows then that care should be taken while following the natural order of the unfolding of the child's intellect, to lead up the mind to an apprehension of general principles. Much injury is done by teachers who rest satisfied with presenting and leaving a topic of study in its isolated and hence barren form. The temple can never arise in perfection, strength and beauty, unless the would-be builder can harmoniously dispose and fitly joint together its various parts, from turret to foundation stone. Constant watchfulness is needed that no impropriety of speech pass unnoticed and uncorrected. No remark should be permitted in the school-room which offends the rules of grammar. No amount of effort in after-life can entirely correct habits of this

kind formed and grown strong in early life. Every exercise of the school-room should be an exercise in the proper use of language, habituating the child to accurate and precise form of statement and elegance of expression. Every question should be clear and precise, every answer a correctly constructed proposition.

We subjoin a copy of the truant regulations adopted by the town and approved by the superior court, for the consideration and guidance of those whom it may concern:—

SECTION 1. All habitual truants and children wandering about the streets or public places of said town of North Brookfield, having no lawful occupation or business, not attending school and growing up in ignorance, between the ages of seven and sixteen years and residents of said town, shall, upon their names becoming known to the truant committee of said town, be required to attend such of the Public Schools of said town and for so long a time as shall be designated by said committee.

SECT. 2. It shall be the duty of said truant committee, on learning that any child between the ages of seven and sixteen years is a habitual truant, or is in the habit of wandering about the streets or public places of said town, having no lawful occupation or business, not attending school and growing up in ignorance, and residing in said town, to give notice in writing to the parents or guardian of such child, if there be any residing in said town, stating what school said child is required to attend and for what length of time.

SECT. 3. Any child between the ages mentioned in the preceding sections and residing in said town, neglecting, without good cause shown, to attend the school designated for him or her, as provided in said sections, or any such child having no parent or guardian residing in said town, shall, upon conviction of being a habitual truant, or of wandering about the streets or public places of said town, having no lawful occupation or business, not attending school and growing up in ignorance, be committed to the almshouse in said town for a term not exceeding two years, or pay a fine not exceeding twenty dollars to the use of said town, with costs of prosecution, to be recovered on complaint before any trial justice for the county of Worcester.

SECT. 4. The fees in all cases arising under these by-laws shall be taxed and allowed as in other criminal prosecutions and paid from the town treasury if not recovered of and paid by the defendants in such cases.

SECT. 5. It shall be the duty of the constables and the teachers of the Public Schools of said town to report to the truant committee the names of all children between the ages of seven and sixteen years known or believed by them to be guilty of any of the offences named in section three of these by-laws.

For the Committee.—ROBT. E. BEECHER.

PAXTON.

Your committee, for a series of years, have recommended a concentration of your energies and money upon fewer schools, but this

idea seems not to meet the approbation of the town. The town has seemed pleased with the next best plan, that is, to make the schools outside of the Centre, Primary Schools, for the larger scholars did not attend these schools, but waited until the school in the Centre commenced, and then wished the privilege of attending school here; but this was not pleasing to all interested, and the result is that quite a number of scholars in town have not attended school at all, who would have been glad of the privilege.

Now, in our opinion, just what you ought to demand, is a good school in the centre of the town, for six months in the year, at least; and that all the larger scholars in town, who wish, should have the privilege of attending school here.

A New Study.—The study of drawing has been introduced into our schools the present year. Now it may be said, what is the use of drawing in our schools? Do you expect every one to learn to draw? It is supposed by many that in order to succeed in this study one must have a special gift, or aptitude for it; but experience has abundantly demonstrated that where it has been properly taught, success is as certain and as universal as in any branch of study. One is not born with the ability to draw, any more than one is born with the ability to write. The ability to draw depends upon an intelligent comprehension of the laws which govern representation, and upon a disciplined and educated eye, and a trained hand. We expect it will be of great use in assisting scholars in learning to write, for it is witnessed by a great many where drawing has been introduced how much faster and easier scholars learn to write.

The first good result is, as we have said, in writing. The next in assisting scholars to learn geography, by helping them to draw maps. Geography is made much more interesting to beginners when they can go to the board and draw a map of their own, of the lines or the country they are describing; and it allows the teacher to address more than one faculty. In the recitation the eye and hand are addressed, as well as the ear, and it is to be noticed with what wonderful facility and rapidity pupils with only a short time in practice will place a map on the board. We can see the good results of this study thus immediately in Primary departments. But, it is said, drawing should be taught in all grades of our Common Schools, because it gives clearness and vigor to the perceptive faculties, and opens the blind eyes to the beauties of nature and art which lie about us in such abundant profusion, but which those without some slight knowledge of this art are wholly unconscious of; and even the richest scenes that nature presents us in all its charms are plain and commonplace.

There is a superabundant Goodness that has created the beautiful, and that this beauty might be enjoyed, has given us eyes to see and powers to appreciate, but has made this power dependent upon cultivation. If there were no other advantages to be derived from this study, only enabling the scholar to see and appreciate the beautiful, and thereby tending to the improvement in taste and refinement of manners and grace which are so much needed in the school-room, it would amply pay for all the time and exertion given to the study. How useful even the most meagre and trifling knowledge of this art has been in making our ideas perfectly intelligible to others—to an architect, carpenter, mason or machinist—is apparent to all, and pre-eminently so to the man who has occasion to employ any of these men. And if we are to teach our scholars what they are expected to practise when they come to act for themselves, what better can we do than to place drawing alongside of the other fundamental studies—of reading, writing and ciphering.

For the Committee.—H. W. HUBBARD, M. A. BOYNTON, LEVI SMITH.

SOUTHBRIDGE.

Many of our most respected citizens can more easily discern the need of outlay to improve streets and sidewalks than they can to improve our inconvenient and inadequate school-houses and their meagre appurtenances. The material is rated higher than the intellectual. It is nearly useless to discuss the respective merits of different theoretic modes of education, so long as this insurmountable obstacle exists. "Unto whomsoever much is given, of them shall much be required." The one thing that more than all others is required of us to-day, is a liberal outlay on our schools. Roads, bridges and magnificent brick blocks are indispensable in their way, but as means and instruments they subserve an essentially lower and more temporary end than facilities for the general culture of the young in science, literature and taste. Has not the time arrived when it is becoming to act liberally in this cause? Our community are materially prosperous. We have been blessed in basket and store. We are not poor, and yet the inside of many of our school-rooms presents the aspect of absolute poverty, and there is not a school-room in town that does not need something involving expense.

Teachers' Meetings.—The experience of another year has strengthened our conviction of the importance of monthly meetings of teachers. The benefits reflected from these meetings in the increased energy and deepened enthusiasm of the teachers is unmistakable. Though the regulations of the committee compel the attendance of

the teachers at these meetings, still it is not felt by them to be a task—as is often the case in other towns. The meetings are contemplated by the teachers with anticipations of pleasure. The direct instruction imparted, the conference of views, and, frequently, the pleasant conflict of opinions on subjects pertaining to schools and teaching, are the cause of cheerfulness and elasticity of spirits in the teachers, which are obviously beneficial.

Supervision of Schools.—We reiterate the views expressed in our last annual report concerning the desirableness of a superintendent for our schools. More and better supervision is needed. Some of our schools during the past year have had little or no supervision by the committee. To insure the number of visits which the law requires, the schools have been allotted as usual among the members of the committee; yet some have failed to perform this duty. Such neglects of duty are liable to occur when members of the committee are absorbed, as most of them are, in their private vocations. But even when this is not the case, complete unity of aim and action cannot be insured, except when the superintendence is entrusted to a single hand. School supervision should be made a study and a profession, as well as teaching. A general system of development can be best instituted and a common enthusiasm more surely imparted by a superintendent. We therefore believe that the supervision of our schools should devolve upon one superintendent, and not as now upon
ix.

School Committee.—F. C. FLINT, B. F. BRONSON, MANNING LEONARD, J. O. MCKINTRY, A. J. BANTHOLMEW, L. W. CURTIS.

TEMPLETON.

At the last April meeting the town adopted the following by-laws concerning truant children and absentees from school, and chose necessary officers to enforce the same:—

COMMONWEALTH OF MASSACHUSETTS.

WORCESTER, ss.

At the Superior Court, begun and holden at Fitchburg, within and for the County of Worcester, on the second Monday of June, being the thirteenth day of said month, in the year of our Lord one thousand eight hundred and seventy, by the Honorable CHARLES DEVENS, Jr., one of the Justices of said Court.

By-laws concerning Truant Children and Absentees from School.

ARTICLE 1. Any person convicted of any offence described in the 207th chapter of the acts of 1862 and the several acts in addition thereto or in amendment thereof, or either of them, shall be punished with a fine not exceed-

ing twenty dollars or by confinement in any institution of instruction, house of reformation, or suitable situation which shall be provided for the purpose, for a term not exceeding two years.

ART. 2. Any child between the ages of seven and sixteen who, while a member of any school, shall absent himself or herself from school without the consent of his or her teacher, parent or guardian, shall be deemed a truant.

ART. 3. Any child between the ages of six and fifteen, who shall not attend some Public School or suitable institution of instruction at least twelve weeks in a year, six of which shall be consecutive, shall be deemed an absentee.

ART. 4. Children between the ages of seven and sixteen years, wandering in the streets, or loitering in stores, shops and public places, having no lawful occupation and growing up in ignorance, are hereby placed under the supervision of the truant officers, as far as the law allows, subject to the penalties described in article 1.

ART. 5. The town shall annually choose four or more truant officers, whose duty it shall be to make complaints, in case of violation of these by-laws, for the purpose of carrying into execution the sentence thereof, who shall receive such compensation for their services as the selectmen shall determine.

ART. 6. It shall be the duty of every truant officer to inquire diligently concerning all persons, between the ages aforesaid, who shall seem to be idle or vagrant, or who, whether employed or unemployed, appear to be growing up in ignorance, and enter a complaint against any one found unlawfully absent from school or violating any of these laws.

ART. 7. It shall be the duty of every truant officer, prior to making any complaint before a justice, to notify the truant or absentee child and its parent or guardian, of the penalty for the offence. If he can obtain satisfactory pledges of reformation, which pledges shall be subsequently kept, he shall forbear to prosecute.

Voted and adopted by the Town of Templeton, at a legal meeting holden April 9th, 1870.

Attest:

GERARD BUSHNELL, *Town Clerk.*

The foregoing by-laws of the Town of Templeton, being presented to the Court at the present term, are approved.

Attest:

JOSEPH MASON, *Clerk.*

A true copy of record. Attest:

JOSEPH MASON, *Clerk.*

School-houses.—While much remains to be done to our school-houses and grounds surroundings, the committee take great pleasure in saying that the school-rooms in every district present an inviting and cheerful aspect. Many of them have been newly papered and painted: in one new and tidy seats have taken the place of the old disfigured benches. Each room that was not previously supplied has been furnished with outline maps and globe. The blackboards have been put in good condition and to a great extent used. Some object to these things as useless expense, because they are so quickly destroyed. It is time that our scholars give up such habits. Let the teacher insist that

When an article is destroyed the scholar shall replace it, then sustain him in enforcing the rule. We spend much to beautify our houses. If useful furniture is worn out or destroyed it is quickly replaced. Our churches are softly carpeted and cushioned. Next to home and the sanctuary our children should love the school-room. Why not, then, in a proper way, make them as attractive?

School Committee.—P. BLODGETT, F. LELAND, J. B. GOULD.

UPTON.

It must be apparent to all that a teacher's vocation is one of great worth to the community, as well as of great responsibility. Though the success of our schools depends not alone on their ability and power, yet, unless the teacher is properly qualified and gifted, the work will fail, even if all the other influences which affect the character of the school are right. Sir Wm. Hamilton declared that "instruction is the most popular and the most difficult of arts." It is an art. In this, as in other departments of art, the teachers' success will be in proportion to their gift to teach. But no teacher, however gifted, can teach unless having thorough culture. Many of our teachers do not instruct, but merely hear the pupils recite. But the thorough culture needed costs in both time and money. The compensation should be such as to induce them to thus prepare themselves. Let us avoid merely cheap teachers; demand of all higher qualifications; then, if they have a love for the calling and enthusiasm, you will see the standard of our school rising. This progress is the absolute need of our schools. The unconscious teaching of a true example—winning manners and proper language—is often the greatest power a teacher exerts. Let us see to it that this is with us on the side of better schools.

Superintending School Committee.—GEORGE S. BALL, HORACE FORBUSH.

UXBRIDGE.

What farmer would think of employing a man to labor for him in preparing the ground for his crops, without seeing that he was provided with a suitable team, plough and other implements for breaking up the sod? And certainly he would not employ a man for that purpose if he had no land to prepare. Or what manufacturer would employ a skilful superintendent without seeing that machinery and stock and laborers were provided over which to exercise his skill and supervision?

And neither of these acts would be more absurd than to employ teachers for your children, and not have your children in the school-room more than two-thirds of the time.

Think for a moment what ideas would pass through your minds if some one in your employ should labor for four days in the week, and yet ask pay for six days' work! And yet this is just what your teachers, in some instances, have been doing the past year; and this, without any fault on their part, but for the reason that the children were not at school at all for days in succession, or have come in late, disturbing the school and hindering those who would improve from the progress they would otherwise have made.

We commend this subject of true teaching to all who take upon themselves the responsible position of teacher. Make yourselves thoroughly acquainted with the subject you have to teach, before you attempt to make your pupils acquainted with it; and, above all, try to ascertain the real difficulty in the mind of your pupil, before you try to remove it. Do not insist that the pupil shall use your set formula to express the idea or truth you are trying to teach him, or to ascertain if he knows; but insist that he shall first express it in his own language; and then, if his language is poor, show him how to put his ideas into proper form. Do not be too quick to show how the thing is to be done; it may be easier for the teacher to do so. The boy who grows up without proper exercise of his powers gains no strength for manhood, and the scholar who is assisted to all he accomplishes by his teacher, is almost sure to fail when put to the test of relying on himself alone.

Two things should specially be required,—accuracy and rapidity. Without accuracy, all business transactions in life will be failures. Without rapidity, the steam and lightning of the present day will leave one so far behind that he might as well not be at all.

To secure these, frequent reviews are necessary; and let written examinations be made and preserved, at least once in two or three weeks, testing the scholar in what he has been over.

The subject of spelling has attracted much attention in all our schools for some years past, and in the High School special attention is given it, as well as in the other schools; and we have found more good spelling in the schools generally, the past year, than has been witnessed for many years.

In one of our schools there was a class of eight, whose regular exercise in spelling was to write twenty-five words daily, four days in the week, on the blackboard; at the end of the term they had spelled twelve hundred words, and missed nine, no member of the class having missed more than two words. Other classes may have done as well as this, but as no record has been kept we have no knowledge of it.

Chairman of School Committee.—C. A. WHEELLOCK. *Secretary.*—C. A. TAFT.

WARREN.

Normal Schools.—Experience has shown that these schools are doing a good work. Graduates from these schools are eagerly sought for; and they command a higher compensation, as a general rule, than those who have not had the advantages which they furnish.

We do not mean by this that there are no good teachers outside graduates of Normal Schools; or that Normal Schools make good teachers of all their pupils. But we do mean that if a person has a fair share of those qualities which are needful in a teacher, a Normal School training will help them to a success which they would not be likely to reach without it.

Selection of Teachers.—With the convictions just expressed, we have sought to introduce Normal teachers into our schools. This has sometimes been done to the exclusion of home applicants. We should be glad if we had home talent enough of the right kind for all our schools, and hope, as the fruits of our High School continue to ripen, we shall. But until those of our young people who wish to teach shall not simply acquire a knowledge of the common branches, but shall also acquaint themselves somewhat with the best methods of teaching, they must not expect to be put into our large and difficult schools.

Qualification of Teachers.—In this matter of the qualification of teachers, we are even now far behind some of the old countries which we sometimes vainly think we have outgrown. In the North-German States, for instance, teachers must graduate from a Normal Institution, pass a rigid examination, and then teach three years on probation, before receiving a final certificate. Wurtemberg requires that notice of an intention to teach shall be given; then follow two years of preparation for a Normal course, which consumes three years more. Then two years must be spent as an assistant in an approved Public School, after which, if the candidate passes a final examination, he may be admitted to the honor of teaching a Primary School, and may consider himself in the line of promotion. But a great many of our people think that almost anybody can teach a Primary School! Evidently we need a more enlightened estimate of what constitutes a good teacher before we can hope for any great degree of perfection in our Common Schools.

School Committee.—J. H. MOORE, J. W. HASTINGS, GEORGE M. NEWTON.

WEST BOYLSTON.

Order in school is an absolute necessity. The only question is how to obtain and maintain it. And all parties are interested in its solution, and in the attainment of this end in the best way. The teacher and every scholar, and every parent and guardian whose children are educated in our schools, as well as the school committee, and all parties are under the highest obligation, not only to know how, but to contribute also to the accomplishment of the fact of good order in school.

First, then, let the teacher go into the school with the understanding that she will be sustained by the committee and by the parents and guardians of the children. This will give her confidence and courage. Let her have some definite view of her own of what it is needful to require of her pupils. And whatever is needful, let her insist upon with firmness. Let her assume and maintain a dignity and reserve which shall command respect. Not a formal and affected dignity, but let her feel her superiority and ability to govern and to teach; for frivolity will beget contempt even in children. But at the same time let her approach the children with that frankness and friendliness of demeanor and expression which shall gain their confidence and esteem. Let her convince them by all means that she is their friend, and is toiling for their good. This may all be done without any abatement of true dignity or loss of respect. Let her be strictly just and impartial in the administration of her government and in imparting instruction. In the nature of things, she will love some scholars more than others; but never should she be guilty of injustice or neglect in school to those loved least. Let the teacher observe these things, and if she is capable of loving and making herself lovable, an affection will spring up between herself and her charge which will insure obedience and great success, and the use of the rod and the ferrule, and the motive of fear which they inspire, will be needless and forgotten. A reverential fear, a fear to do wrong, will supersede it; conscience itself will be aroused and made to do its legitimate work; the children will be taught to govern themselves, and self-government is the great duty of life.

Our schools are considerably in advance of what they were ten years ago. A more extensive, thorough and practical attainment of the sciences taught and the facilities for the attainment of knowledge are much better to-day than ever before. Since the abolishment of the district system the town has put its school-houses in a condition of convenience, comfort and good taste, which is worthy of much praise and

ulation. It has constructed four houses, with two departments each, and one with a single department, and all with modern improvements of seating, lighting, warming and ventilation, and also a room in the basement of each, where the children can take their physical exercise and play during the moments of recess and the permission, when the weather does not permit them to enjoy these in the open air. These improvements made within the last few years, have cost the town many thousand dollars; and this "bread" cast upon the waters of intellectual improvement will surely yield us a harvest.

Our school-books are also much better than formerly, being better adapted to the wants of the learners, making the facts of science clearer, more intelligible and practical; and usually we are able to obtain teachers who are up even with other improvements.

Yet there is an evil in regard to books which should be noticed. The want of uniformity in our text-books is a great hindrance to rapid progress in education. It multiplies classes, hinders, confuses and obstructs the whole process of learning.

Secretary.—D. R. LAMSON.

WORCESTER.

The Training School has graduated twenty-nine teachers who are now successfully engaged in the Primary Schools of the city. At present, eight young ladies are in training there, all graduates of High School. The success of those who have enjoyed the advantages of this school, both in obtaining situations and in filling them, would seem a strong inducement for those wishing to become teachers to avail themselves of its privileges. But the school could accommodate a class twice as large.

Two causes seem to unite in keeping this school small. In the first place those who have completed a course of study which qualifies them to enter here, are unwilling to spend a year more in specific preparation for the work of teaching. They desire present employment.

In the second place, some may prefer teaching in a grade other than that for which, especially, this school prepares them; and all see that we cannot always employ all the Primary teachers who might be educated in that school. A school of this character, to meet our needs should not be limited to a single grade of teachers, though this is the most important; its supply should not be drawn from a single source; its influence should not be confined, nor should its graduates be restricted for employment to one place.

Mechanical and Industrial Drawing School.—This is the first school of the kind established under the law of May 16, 1870. The subject was referred to a special committee early in June. Their conclusions and recommendations, which were adopted, are embodied in the following:—

To the Mayor and School Board of Worcester:

The special committee, appointed June 5th, to consider the recommendation for opening a Drawing School for adults, submit the following report:

At the recent session of the General Court, a law was enacted, the first section of which includes drawing among the studies required to be taught in the Public Schools; the second section directs that every city and town having more than ten thousand inhabitants shall, annually, make provision for giving free instruction in industrial and mechanical drawing to persons over fifteen years of age, &c.

The instruction now given in the Public Schools includes drawing, in compliance with the first section of this law; and it is gratifying to know, that we were in advance of the public opinion of the State, so far as to be only the second city to adopt this, as a regular branch of study, and thus to anticipate the above legislation which affirms its importance.

The second section obliges towns and cities of the size of ours to provide for the instruction contemplated; but the character and extent of that instruction must, of course, depend upon the wish of the school committee, under whose direction it is to be given.

Industrial or mechanical drawing means, that which is of use in any of the industries of life; and to be of use, it must be simple and practical; but it can be neither simple nor practical, unless it is thorough and scientific. It is the opinion of your committee, therefore, that no instruction ought to be provided for, which is not of this character. And we believe that there are three requisites for such instruction, viz: free-hand drawing, which gives control of the muscles, and educates the hand to obey the will more perfectly; some knowledge of geometric forms and figures which enables one to see in a drawing, not merely a combination of lines and angles, but the elevations and depressions, the surfaces, edges and corners represented; and lastly, practice in drawing from objects themselves, by which one is enabled to make the real form appear, and stand out, as it were, upon the flat paper.

In a course of this kind not less than thirty lessons are required: five in free-hand drawing alone; five more to alternate with lessons in geometric forms, and the remaining fifteen in drawing from objects and mechanical drawing. This proportion may vary with different classes, and can best be fixed by the teachers.

This course of instruction may be to some extent complete in itself, so as to be valuable if carried no farther; and yet the course next year, if the school is continued, may go on from the point where this terminates.

* * * * *

To bring this matter before the board in definite form for action, your committee submit the following:—

Resolved, That the superintendent of schools be requested to engage Boynton
 and to secure the services of Profs. Gladwin and Alden, for a school of
 industrial and mechanical drawing, upon the plan set forth in the foregoing
 report.

That he cause notices of the proposed school to be published in the daily
 papers, setting forth its purpose and inviting application for admission to be
 made at his office.

That, from these applicants, he admit as many as the school will accommodate,
 making such discrimination as he, in connection with a committee appointed for
 the purpose, may deem best; and

That he open the school October 15th, provided not less than twenty appli-
 cants be received.

GEORGE W. GALE,
 R. N. MERIAM,
 D. S. GODDARD,
Committee.

CITY HALL, Sept. 29, 1870.

In accordance with the above resolves applications were received
 at the superintendent's office; and instead of the twenty, thought
 necessary to warrant proceeding with the enterprise, in about one
 week, more than two hundred had applied. So large a number had
 not been provided for; but on examining the list it was found that
 many could reasonably be excluded except pupils from the day schools,
 to whom instruction is already provided. Omitting these, and such
 others as were in any way deterred from entering the school, there remained
 136 men and 9 women. These were organized into two classes
 in free-hand drawing, each meeting two evenings a week. After
 these classes were opened, many others applied for admission; but
 as some progress had been made, beginners could not so profitably
 commence; the classes were full; the enterprise was new; the strength
 of the teachers limited; it was not thought best therefore to open a
 third class.

In respect of age there were forty-nine under 20, sixty-one between
 20 and 30, twenty-eight between 30 and 40, four between 40 and 50,
 two between 50 and 60, and one over 60. In respect of occupation
 there were machinists 42; carpenters 26; pattern makers 7; teachers
 3; masons 3; farmers, boot and shoe makers, clerks and architects 4
 each; organ builders, book-keepers, painters, armorers and engravers
 1 each; insurance agents, civil engineers, reed makers, engineers,
 upholsterers, moulders, wire drawers, blacksmiths 1 each; miscella-
 neous, 24. Since the class started very few have dropped out. More
 than half the class walk two miles to get the lessons, and more than
 two-thirds of them are in their seats half an hour before the time of
 beginning. Only five of them have ever been in a drawing class
 before, though voluntary classes have been held in the city for years."

Upon the completion of the ten lessons in free-hand drawing by Prof. Gladwin contemplated by the committee, it was found that about one-third of the class wished to continue them. The remaining numbers could not be taught mechanical drawing in a single class. Mr. Higgins, superintendent of the Washburn machine shop, was therefore engaged for the second class, Prof. Alden taking the other. A pupil of the Institute has assisted in both.

The course of introductory instruction in free-hand is as follows:—
“Three lessons in horizontal and vertical lines, and plain and ornamental forms composed of those lines. Three lessons in curves. Two lessons in perspective. Two lessons in review.

“For the first course of twenty lessons in mechanical drawing a good part of the time, say three-fourths, is spent in learning the elements of descriptive geometry. Descriptive geometry is mechanical drawing in one sense; that is, it is the method of representing any object in horizontal and vertical projection, in any position. A knowledge of geometry proper is of incalculable value as a preliminary, but is not indispensable. The problems to be given must be selected with great care; and the aid of a blackboard, so contrived as to show the two planes, is of great importance. The remaining lessons may be devoted to simple or complicated problems in construction, according to the proficiency of each pupil. It will be observed that this method of instruction differs widely from the one usually followed in classes connected with our voluntary organizations. That plan is to give the pupil certain arbitrary rules for producing certain results, and pupils are generally allowed to choose their own studies. This plan contemplates the mastery of the great principles of projection. So that the pupil can delineate any form he wishes, and put it in any desired position.”

All the instruction in these classes is oral. The teacher illustrates with crayon at the board; at first, drawing in advance of the class the figure he wishes them to copy; and, farther on, showing what perspective is by models, cubes, cones, cylinders, spheres and a few other simple forms before the eye, and their representation by lines upon the board. In the mechanical classes the projection of any object upon the vertical and the horizontal plane is shown by a small blackboard, hinged in the middle. When placed at right angles the two planes are seen; when open it appears the ordinary surface on which the two planes must be represented. In this simple, practical way, principles are elucidated,—not mystified by abstract definitions.

Each pupil is provided with paper, pencils, rubber, and a simple drawing board only,—except that the mechanical class have a simple

set of instruments: a pair of adjustable dividers, a pen, a scale, a T square, and a triangle.

The entire cost of these classes, eighty lessons in all, or thirty to each class, is about \$900; or not far from \$6.00 to each pupil.

To the promptness of this board, to the generosity of the trustees of the Institute, to the ability and enthusiasm of the instructors, and especially to the wise direction and impulse given by Prof. C. O. Thompson, is due the success of this school which is the model of its kind, and which will lead, it is believed, to still further cultivation of a fruitful field.

Teachers.—"Next to the preaching of God's Holy Word, I know of no more Godly purpose that a man goeth about, than the teaching of a schole." These are the words of Roger Ascham, Preceptor of Queen Elizabeth; and three centuries, though they have modified the spelling of the words, have only made the truth the more apparent. The dignity and importance of this profession is often undervalued or misunderstood. To the obscure preceptor are due those influences which produced a Shakspeare, and rendered the queen illustrious. Many a man who has filled a large place in history, received the first impulse from his teachers. No class of persons has a more powerful influence upon the nation of the immediate future. It is questionable whether even the exception in the above quotation should be made. The teacher, five or six hours a day five days in the week, with the advantage of superior age, is moulding the impressible minds of youth, and, whether he will or not, leaving more or less distinctly, upon fifty minds and characters, the impress of his own. Teachers are a power behind the throne of public opinion, by which that throne itself is moved. No trump of fame calls to this field of humble yet effective labor. When some heroic action, some discovery in science, or some deed of patriotic valor is heralded through the land, no one thinks of the teachers by whom the virtue was encouraged and the industry stimulated by which high attainments become possible. To them, partly, is often due the credit of other men's success, as on them may partly rest the responsibility of others' failure.

To fit one for this high calling, there is need of the most careful preparation and the most conscientious devotion. Yet numbers are anxious to engage in it, not only without professional training, but almost without education; and it is surprising to see how low is the popular standard of what should be required in a teacher, and how little the value of the best talent is really appreciated.

The average length of time female teachers continue in the business here is about four years. Ninety-three per cent. of all our teachers are females. Very likely and properly this per cent. will continue to

be nearly as large. For reasons beyond the control of society and higher than human laws, their time of service will as a rule continue to be short. But frequent change in the corps of teachers is injurious. There should be a conservative element among them,—a class permanently employed.

Statistics show that the proportion of young men engaged in teaching is smaller than it was twenty years ago. But there is an army of agents, urging upon the public that which is not desirable, and of persons courting success in unproductive employments for which they are not qualified. If the men of talent among these would fit themselves to be teachers, and engage in this noble work, they would become useful members of society, and, in elevating humanity, find themselves ennobled and their self-respect restored. The policy which has driven young men from this profession is not good. To retain in it, in sufficient numbers, those whose ability may illustrate its capacity for good, requires a change in the popular estimate of its importance.

Attendance.—The average daily attendance of pupils has been ninety-one per cent. of the average whole number belonging to the schools. During the summer term the small-pox prevailed in the city to an alarming extent; and many children were withdrawn from the schools on that account. This will probably fully explain the decrease of about .007 from the per cent. of last year. But after every allowance has been made for necessary absence, the number of pupils who attend school with no regularity is alarmingly great. There can be no good reason for the constant absence of one pupil from every eleven; or the absence of each scholar one-eleventh of the time. The cost of the schools is the same as if all were present. By these absences then nearly nine per cent. of this expense is lost. It is not to be expected that there will be no absence. So much absence is needless and should be prevented. By the rules of the school board "Sickness, domestic affliction, and absence from town are regarded as the only legitimate causes of absence or tardiness. All other cases must be considered as in violation of the rule and treated as misdemeanors. Absence from any of the schools for other than the specified causes, amounting in the aggregate to three days during one term, shall subject the pupil to discipline. In every instance of absence or tardiness, a written statement, or personal explanation, shall be required of the parent, master or guardian, on the return of the pupil to school, or at the next session, that the teacher may know whether the cause is legitimate or otherwise."

To enforce this rule, it is generally necessary only to point out to parents and guardians the evils of irregular attendance, both to their

children and to the schools. But if moral means fail, the ultimate remedy is expulsion from school; that is, to cure the evil of occasional absence we compel constant absence. As may well be supposed, such a remedy is applied with great hesitation. For those who wilfully or carelessly detain their children from school, it is worth considering whether some other means should not be used. What right have a few persons thus to defeat almost nine per cent. of the good our schools might accomplish?

The right of a parent to control his own children is admitted on all hands. But that control is limited. He cannot take their lives as he could under the Roman law; he cannot deprive them of food; nor of at least a little education. And so when they are once in school, he is morally bound that their irregularity shall not retard the general progress, and thus infringe upon the rights of others. Those few parents who suppose themselves possessed of the right to detain their children at home any day because, forsooth, they are taxed to support the schools, should be reminded of their duty by some means more effective and more just than to dismiss those children entirely.

Besides irregular pupils there are children under fifteen years of age, who do not even nominally attend school more than one term in a year, if at all. This leads to the question whether it would be right to make attendance compulsory.

As intimated above, other rights are to be considered besides that of the parent over his child. The child himself, every human being, has a right to such a training as will fit him for usefulness and enjoyment, just as he has a right to care, food and raiment in the helpless years of infancy. The parent who abandons an infant may be punished; so should he be punished who neglects the education of his child. The infant would perish. The child in ignorance may live in wretchedness and toil, to curse his parents, and by his blighted life to reproach society, if not by crimes to visit it with retribution for the evil it should have prevented.

Society then has rights. It is of the highest interest to us each, whether our fellow-citizens are intelligent or ignorant. We are all concerned whether in the future our children are to live in an educated community, or in the semi-barbarous state of prevailing ignorance. It is a shame that any intelligent freeman—and no others are free—can stand at the ballot-box and see his vote cancelled by some ragged, unkempt sot, whose leering eye cannot see nor his benighted mind comprehend the printed ballot he casts. Where this is possible, democracy is a sham. To establish firmly republican institutions, such a thing must be made impossible. In self-defence, therefore, and not from benevolence merely, the State has established free

schools. But this defence is not complete, while those who know not the advantages of those schools may desert them. To secure the education of children, the law of this State imposes a fine upon all parents who do not send their children to school at least twelve weeks each year from the age of eight to fourteen years; and another law fixes a penalty upon all persons in whose employ children are found, under twelve years of age, who have not attended school eighteen weeks within the twelve months next preceding such employment, or between twelve and fifteen years of age, who have not attended school eleven weeks during the preceding year.

During the past year a large number of children have been sent to school from the manufacturing establishments of this city; and to the credit of the proprietors be it said, not one of them has failed to comply with the law in its true spirit as soon as they learned its existence. To them it had been unknown. And under the first of these two laws children are in school to-day, who otherwise would be in the street. Not the infliction of the penalty, but the fear of it, keeps them there. To the credit of the city be it said, these unnatural parents number less than a dozen.

One hundred and five weeks at least, or a little more than two and a half school years, the child fifteen years of age, born in this State, must have attended school. This little is important; it may create a thirst for knowledge which will lead to further search; but it is very little, and wholly inadequate, if intelligence is the qualification for citizenship. At this point the State's defence is weak.

The tax-payers also have rights. In the necessity of the State, is found the only justification of taxing citizens to support schools. For the sake of universal education taxes are imposed, which fall most heavily upon the rich, many of whom have few if any children in Public Schools. "Why must I," one of them may ask, "pay these thousands for schools to which I have no children to send?" "Because," we answer, "your property and life are protected by a government whose corner-stone is popular education; your land is worth more in an intelligent community; you hold that property subject to your duty to society, and a part of this duty is to help educate the children." He may continue, "But my poor neighbor's large family do not attend school; some of them work in the shops, some range about my fields, and some rob my garden and fruit-trees. I am compelled to support schools for all, but not all attend." We enforce the law; eleven weeks the children go to school; again they are at large. Our friend goes on, "I am taxed to support schools for all, nine months in the year; these children attend only three; two-thirds of my tax is extortion." And to this we can make no reply.

Justice to the tax-payer, the safety of the State, and our duty to the children demand a law compelling the attendance of all children of school age, during the whole time when schools are supported at the public expense; allowing, however, private schools to be patronized by those who prefer them, and those of feeble health to be excused. In this logical position the Public-School system must be placed before education will be "universally diffused."

This law would not be the substitution of force for persuasion. It would command only what ninety-nine one hundredths of all good men are now doing. It would be but the formal expression of what is now the opinion of society, and like the faint approximation to it which we now have, and like all good laws, would operate less by its penalty than by fear of its penalty. And under such a law, many a poor man would find the means of educating his children, who now thinks himself unable to dispense with the small earnings of childish hands, and many a tippler would be compelled to leave his cups.

Superintendent of Public Schools.—ALBERT P. MARBLE.

Report of the Committee on the Truant School.

Gentlemen of the City Council: The Committee on the Truant School respectfully submit the following report:—

Under the State law, which requires cities and towns to make all needful regulations concerning habitual truants, this school was established at the city farm, by an ordinance of the city in 1863. It was opened in December of that year, and was in charge of a board of truant commissioners. By a change in the law in the year 1867, the care of this school passed into the hands of a committee of the board of overseers of the poor. The expenses of the school which, previously, had been included in the cost of maintaining the poor, have since that time been made a distinct item.

The yearly cost for each boy is about \$170. This outlay accomplishes more than the education and reformation of a single boy; though when we consider from what he is saved, this seems but a small expense. The fact of truancy implies the absence of proper parental care; and the boy who, when left to himself, forsakes his school, will not fail to receive on the street an education in the school of vice. To save a boy from the consequences of such conduct, is worth more than \$170, and many an instance can be shown of a vicious idle wanderer transformed at this school into a well-behaved and studious boy. But great as the benefit in most cases derived at this school by the pupils themselves is believed to be, this is but a small part of the good it accomplishes. By a wholesome regard for

its restraints, many an idler in inclination and wish is retained in school.

The superintendent of the almshouse has the general care of those sent to this school. He attends to feeding and clothing them, and gives them such liberties about the premises as their conduct entitles them to receive. A teacher assembles them for instruction and study, four hours a day in summer and five hours in winter; and in the teaching reference is had to fitting them for re-entering the Graded Schools.

During the year the truant officer has attended to two thousand four hundred and forty-one cases of absence from school, from unknown causes, reported by the teachers. Of these, eleven hundred and eighty were returned to their schools. One hundred and forty-eight boys inclined to truancy, have been assigned to their schools by the overseers of the poor, which is the first step toward the Truant School. Of these, twenty-eight who persisted in truancy, have been arrested and brought before the municipal court. Eighteen of the number have been sentenced to the Truant School, for terms varying from six months to two years; while the cases of others have been placed on file.

The route to this haven is now pretty well understood by the truants of the city. If absent from school without known and valid excuse, they are reported by the teacher and visited by the truant officer; if this is repeated, they are assigned to the school which they ought to attend by the overseers of the poor; if they continue on the voyage they find themselves safe in this school and away from a like temptation. As seen above, only a small proportion go beyond the first steps.

In the discipline of these boys, corporal punishment is resorted to in cases where it seems necessary. But this means is not relied on wholly. Every one understands that by obedience, punctuality and faithfulness, he may secure many privileges and larger liberty. And the committee have thought that even more may be done in this direction. What these boys need is, a prudent foresight and self-control,—ability to see a great good before them, in the future, and the power to refuse present gratification for the sake of attaining it. Without this, they ran away from school. With it they would have anticipated the rewards of faithful study. It must, then, be developed in them, as far as possible, while here.

For this end, it is proposed to institute a system of rewards by which the boy may, by good conduct, reduce the term of his sentence. Let him feel that a certain period of good behavior and faithful study will release him a week earlier; that a longer continuance in well-

ing will receive a reward still greater in proportion; at the same time, let his feeble virtue be stimulated by some present advantage, and his impulse to evil be restrained by a wholesome fear of chastisement or privation, and in this way you fit him to regulate his conduct in school and in life; for incentives and restraints similar to these operate upon men in society.

Every year the punitive character of prisons and houses of correction is being blended more and more with the idea and the hope of reformation. In the late address of the governor, we see that State prisoners are receiving instruction in Evening Schools, and thus slaying that ignorance which is, to so large an extent, the source of their crimes. Such a school as ours is in the van of that movement; for it attempts to dry up the source, and thus prevent crime. One hundred dollars here may save the police force a thousand.

This school has accommodations for twenty-four pupils. Only about half that number are there, on an average. More might be accomplished without much additional outlay. There is a class of juvenile offenders, brought before the municipal court for offences not the most serious, for whom the punishment must be either fine or imprisonment. The fine falls upon parents, who in some cases lament and suffer for what they would gladly prevent. Imprisonment would punish, but might not improve the offender. Moreover, there is no propriety in sending one boy to the city farm because he *will not* attend school, and another, no worse than he, and equally in need of instruction, to jail where he *cannot* attend school.

Some provision should be made by which boys guilty of petty offences, no worse in their character than truancy, may be sent to this school. We doubt not that you, gentlemen, will take such action in the direction as may be needful. And in view of this it would seem that the appropriation for this school, though larger than necessary last year, should not be reduced for the present.

Truant School Committee.—ALBERT P. MARBLE, JAMES M. DRENNAN, D. F. PARKER.

AN ABSTRACT

THE SCHOOL RETURNS MADE BY THE SCHOOL
COMMITTEES OF THE SEVERAL TOWNS AND
CITIES IN THE COMMONWEALTH, FOR
THE SCHOOL-YEAR 1870-71.

BOARD OF EDUCATION.

[Jan.

BARNSTABLE COUNTY.

TOWNS.	Population—U. S. Census, 1870.	Valuation—1865.*	No. of Schools.	Amount expended in 1870 for erecting School-Houses.	Amount paid for Re-painting, &c., in 1870.	No. of different Schools during the School-year.	Average attendance in all the Public Schools during the School-year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State between 5 and 15 years of age, May 1, 1870.	Number of different persons employed as Teachers in Public Sch'ls.	
											Males.	Fem.
Barnstable, .	4,793	\$2,265,407	27	-	\$1,150 11	909	696	13	139	885	7	29
Brewster, .	1,259	801,452	7	-	100 00	267	196	3	56	264	1	8
Chatham, .	2,411	1,100,543	13	-	456 38	565	377	-	84	543	3	13
Dennis, .	3,269	1,181,339	16	\$818 00	63 00	787	566	5	204	752	6	15
Eastham, .	668	219,948	4	-	-	158	118	5	15	118	3	4
Falmouth, .	2,237	1,375,661	14	3,229 75	126 00	359	278	1	56	406	3	15
Harwich, .	3,080	1,025,217	19	10,191 13	2,164 43	884	725	11	226	810	9	21
Mashpee,† .	348	-	2	-	46 23	63	39	-	11	58	2	2
Orleans, .	1,323	558,858	8	-	180 00	334	237	-	88	239	4	8
Provincetown, .	3,865	1,576,145	12	-	1,493 48	825	647	-	108	737	4	12
Sandwich, .	3,694	1,669,105	24	-	400 00	885	695	17	144	735	10	17
Truro, .	1,269	361,717	8	-	50 00	325	228	8	96	327	6	6
Wellfleet, .	2,135	700,165	14	-	200 00	559	468	2	99	424	4	14
Yarmouth, .	2,423	1,440,641	9	-	116 00	425	296	3	85	371	2	13
Total, .	32,774	\$14,276,198	177	\$14,288 88	\$6,545 63	7,345	5,566	68	1,411	6,669	64	177

BERKSHIRE COUNTY.

Adams, .	12,090	\$3,350,551	86	-	\$4,594 00	2,382	1,478	19	137	2,152	7	48
Alford, .	430	340,490	3	-	-	77	48	2	14	80	1	4
Becket, .	1,840	478,120	11	-	12 05	375	218	9	82	380	4	16

Egremont, . . .	1,232	988,180	8	-	279 90	188	128	8	10	141	2	4
Florida, . . .	931	587,619	6	-	-	265	188	8	10	241	-	10
Gt. Barrington, . . .	1,322	152,528	6	-	20 00	160	110	1	7	175	2	7
Hancock, . . .	4,320	2,177,071	20	5,000 00	-	189	114	7	11	189	1	11
Hinsdale, . . .	882	490,299	7	-	40 00	770	553	84	32	904	2	32
Lanesborough, . . .	1,695	801,755	10	1,710 79	47 80	161	97	10	8	151	6	8
Lee, . . .	1,893	661,048	8	650 00	1,656 08	848	229	6	14	326	1	14
Lenox, . . .	3,866	1,682,411	17	-	500 00	797	189	8	9	316	2	9
Monterey, . . .	1,965	827,539	10	-	198 76	895	626	20	22	918	3	22
Mt. Washington, . . .	653	222,117	8	-	62 00	173	118	8	9	151	2	9
New Ashford, . . .	256	87,676	2	-	-	90	44	2	3	74	1	3
N. Marlborough, . . .	208	108,662	2	-	-	50	81	3	2	52	2	2
Otis, . . .	1,856	615,727	12	-	80 00	351	249	9	17	878	2	17
Peru, . . .	980	311,595	10	-	368 57	242	160	15	17	198	2	17
Pittsfield, . . .	455	214,930	6	2,450 00	220 00	116	91	4	6	99	-	6
Richmond, . . .	11,112	6,378,878	35	1,804 81	1,495 89	1,815	1,390	37	58	2,517	1	58
Sandisfield, . . .	1,091	502,277	6	-	177 08	206	146	5	9	214	5	9
Savoy, . . .	1,482	612,943	13	-	17 00	317	204	7	18	290	6	18
Sheffield, . . .	861	272,400	9	-	18 80	185	129	10	10	181	4	10
Stockbridge, . . .	2,535	1,206,820	15	2,400 00	800 00	475	313	38	16	488	4	16
Tyringham, . . .	2,003	1,323,883	10	4,953 00	115 43	367	284	10	18	383	3	18
Washington, . . .	557	299,584	6	-	20 00	140	89	18	7	119	2	7
W. Stockbridge, . . .	694	289,398	7	-	102 00	190	107	7	8	167	3	8
Williamstown, . . .	1,924	613,816	8	450 00	25 00	460	247	11	11	412	4	11
Windsor, . . .	8,559	1,160,587	17	8,482 81	105 15	686	414	20	18	659	2	18
	686	308,324	9	450 00	8 15	172	94	10	12	144	1	12
Total, . . .	64,826	\$27,937,444	831	\$38,881 41	\$10,857 45	12,692	8,588	347	1,088	18,085	79	440

* The State Valuation of taxable property in 1870 has not yet been completed.

† Marshpee District incorporated as the town of Marshpee in 1870.

BOARD OF EDUCATION.

[Jan.

BARNSTABLE COUNTY—CONTINUED.

TOWNS.	Aggregate Length of the year, in Months and Days.	Average Length as returned by Com- mittee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including board, fuel, care of rooms, for the school- year 1870-71.	Amount of board, fuel, &c., voluntarily con- tributed for Public Schools.	Expenses of Superin- tendence and print- ing School Reports.	Salary of Superintend- ent of Public Sch'ls.	Amt of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Funds.	Income of Funds, ap- propriated to Public Schools at the option of the Town, includ- ing Tax on dogs.
			Males.	Females.							
Barnstable, .	203.5	7.10	\$70 26	\$35 90	\$8,000 00	\$90 00	\$350 00	-	\$2,000 00	\$132 80	-
Brewster, .	52.15	7.10	60 00	33 00	2,000 00	-	115 00	-	-	-	-
Chatham, .	119.15	9.4	76 25	23 91	4,000 00	-	254 08	-	-	-	-
Dennis, .	120.10	7.10	67 50	25 50	5,000 00	180 00	75 00	\$50 00	-	-	-
Eastham, .	27	6.15	50 00	23 51	1,000 00	-	67 00	-	-	-	-
Falmouth, .	90.15	6.12	50 00	30 90	3,000 00	10 00	217 95	-	10,000 00	1,000 00	-
Harwich, .	116	6.10	50 88	25 00	4,500 00	25 00	185 00	-	-	-	-
Mashpee, .	11.11	5.15	38 00	27 00	250 00	-	15 00	-	-	-	-
Orleans, .	64	8	66 75	23 50	2,200 00	-	125 00	-	-	-	-
Provincetown, .	120	10	75 00	27 09	7,000 00	-	25 00	400 00	-	-	-
Sandwich, .	150	6.5	62 00	27 25	6,500 00	-	305 96	-	2,900 00	200 00	\$25 22
Truro, .	45	7.10	48 00	20 00	1,500 00	-	112 00	-	-	-	-
Wellfleet, .	104	7.13	72 50	29 60	5,000 00	-	150 00	-	-	-	-
Yarmouth, .	81	9	88 88	32 25	4,000 00	-	135 00	-	16,000 00	960 00	-
Total, .	7.8	-	\$62 57	\$27 46	\$53,950 00	\$305 00	\$2,081 99	\$450 00	\$30,900 00	\$2,292 80	\$25 22

BERKSHIRE COUNTY—CONTINUED.

Adams, .	858	9.9	\$118 45	\$37 54	\$20,000 00	-	\$700 00	-	-	-	-
Alford, .	20.5	6.16	81 00	20 00	324 71	-	20 00	-	-	-	-
Becket, .	76.2	6.11	85 50	24 10	1,800 00	\$304 00	50 00	-	\$1,229 00	\$73 75	-

[illegible]

BARNSTABLE COUNTY--CONCLUDED.

TOWNS	HIGH SCHOOLS.				INCORP. ACADEMIES.			UNINCORP. ACADEMIES AND PRIVATE SCHOOLS.			Town's share of School Fund, payable Janu-ary 25, 1871.	How appropriated.
	Number.	How supported.	LENGTH.		Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.		
			Months.	Days.								
Barnstable, .	-	-	-	-	-	-	-	1	50	\$1,100 00	\$178 83	Schools.
Brewster, .	-	-	-	-	-	-	-	-	-	-	274 71	"
Chatham, .	1	Taxation,	9.15	\$1,000 00	-	-	-	-	-	-	335 07	"
Dennis, .	1	Taxation,	9	655 00	-	-	-	-	-	-	185 51	Town Treas.
Eastham, .	-	-	-	-	-	-	-	-	-	-	210 98	Schools.
Falmouth, .	1	In part Tax,	9	1,100 00	1	5	\$60 00	-	-	-	135 00*	"
Harwich, .	-	-	-	-	-	-	-	-	-	-	175 20	"
Mashpee, .	-	-	-	-	-	-	-	-	-	-	299 86	"
Orleans, .	-	-	-	-	-	-	-	-	-	-	383 41	"
Provincetown, .	1	Taxation,	10	1,000 00	-	-	-	1	80	600 00	169 04	"
Sandwich, .	1	Taxation,	10	800 00	1	-	-	4	100	575 00	219 07	"
Truro, .	-	-	-	-	-	-	-	-	-	-	-	"
Wellfleet, .	1	Taxation,	10	900 00	-	-	-	-	-	-	-	"
Yarmouth, .	1	Taxation,	9	900 00	-	-	-	-	-	-	-	"
Total, .	7	-	-	-	2	5	\$60 00	6	180	\$2,275 00	\$2,466 68	

BERKSHIRE COUNTY--CONCLUDED.

Adams, .	2	Taxation,	9.15	{ \$2,000 00 }	-	-	-	-	-	\$676 95	Schools.
Alford, .	-	-	-	{ 1,500 00 }	-	-	-	-	-	119 28	"
Becket, .	-	-	-	-	-	-	-	1	22	196 80	"
										\$280 00	

Schools.	1	2	65	\$2,800 00	24	265	\$12,800 00	\$6,622 43
Dalton,	-	-	-	-	-	-	-	186 62
Egremont,	-	-	-	-	-	-	-	289 27
Florida,	-	-	-	-	-	-	-	208 18
Gt. Barrington,	1	9.15	-	-	-	-	-	145 84
Hancock,	1	8.10	-	-	-	-	-	155 90
Hinedale,	1	-	-	-	-	-	-	191 69
Lanesborough,	1	-	-	-	-	-	-	186 10
Lee,	1	10	-	-	-	-	-	326 48
Lenox,	1	10.10	-	-	-	-	-	190 85
Monterey,	-	-	-	-	-	-	-	139 69
Mt. Washington,	-	-	-	-	-	-	-	118 17
New Ashford,	-	-	-	-	-	-	-	112 86
N. Marlborough,	-	-	-	-	-	-	-	184 77
Otis,	-	-	-	-	-	-	-	158 14
Peru,	-	-	-	-	-	-	-	129 68
Pittsfield,	1	10	-	-	-	-	-	705 20
Richmond,	-	-	-	-	-	-	-	153 14
Sandisfield,	-	-	-	-	-	-	-	193 98
Savoy,	-	-	-	-	-	-	-	148 36
Sheffield,	1	10	-	-	-	-	-	229 72
Stockbridge,	1	9.10	-	-	-	-	-	224 18
Tyringham,	-	-	-	-	-	-	-	184 66
Washington,	-	-	-	-	-	-	-	145 84
W. Stockbridge,	-	-	-	-	-	-	-	208 18
Williamstown,	1	9	-	-	-	-	-	289 27
Windsor,	-	-	-	-	-	-	-	136 62
Total,	10	-	-	-	24	265	\$12,800 00	\$6,622 43

• Special appropriation.

BRISTOL COUNTY.

TOWNS.	Population—U. S. Census, 1870.	Valuation—1883.	No. of Schools.	Amount expended in 1870 for erecting School-Houses.	Amount paid for Re-pairing, &c., in 1870.	No. of different Schools in Public Schools during the School-year.	Average attendance in all the Public Schools during the School-year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State between 5 and 15 years of age, May 1, 1870.	Number of different persons employed as Teachers in Public Schools.	
											Males.	Fem.
Acushnet, .	1,132	\$656,500	9	-	\$50 00	203	136	7	35	236	2	13
Attleborough, .	6,769	2,201,660	28	-	1,071 62	938	807	12	90	1,212	5	28
Berkley, .	744	316,002	6	-	15 00	152	126	4	29	148	1	8
Dartmouth, .	3,367	2,432,270	19	\$3,644 00	486 00	626	439	15	119	640	9	21
Dighton, .	1,817	776,779	10	4,860 25	464 85	340	232	7	33	296	-	17
Easton, .	3,668	1,930,900	17	-	-	793	606	11	62	780	3	21
Fairhaven, .	2,626	1,778,217	13	-	1,500 00	533	381	7	38	515	1	15
Fall River, .	26,766	12,632,419	63	9,016 88	9,854 70	6,359	3,637	-	206	5,827	6	75
Freetown, .	1,372	706,117	8	-	-	285	200	6	40	270	-	11
Mansfield, .	2,482	750,442	9	-	256 79	417	315	5	14	464	-	13
New Bedford, .	21,320	20,525,790	22	-	4,163 99	3,534	2,895	-	337	3,777	8	82
Norton, .	1,821	842,527	8	-	612 91	305	203	5	35	299	3	10
Raynham, .	1,713	1,115,026	9	4,088 47	25 00	369	251	8	22	334	1	13
Rehoboth, .	1,895	764,906	15	-	-	414	262	19	49	330	-	19
Seekonk, .	1,021	496,844	8	-	161 33	186	139	9	20	182	-	12
Somerset, .	1,776	865,618	7	396 19	586 85	420	240	10	42	396	2	10
Swansea, .	1,294	755,680	10	-	40 00	271	186	8	41	254	5	12
Taunton, .	18,629	8,468,074	53	55,510 00	5,000 00	3,613	2,315	8	135	8,471	6	66
Westport, .	2,724	1,453,897	20	-	575 00	662	391	18	94	548	10	22
Total, .	102,886	\$59,464,668	384	\$77,515 79	\$24,863 64	20,315	18,761	154	1,441	19,979	62	468

DONES COUNTY.

Chilmark, .	476	\$350,801	3	-			109	84	4	23	105	2	4
Edgartown, .	1,516	1,085,467	8	\$200 00	\$200 00	\$200 00	290	248	-	46	828	1	10
Gay Head, .	160	-	1	-	-	12 65	65	36	-	8	40	1	1
Gosnold, .	99	112,993	1	-	-	-	12	9	-	3	19	-	1
Tisbury, .	1,536	684,714	8	-	-	650 00	307	240	1	36	315	7	4
Total, .	3,787	\$2,183,975	21	\$200 00	\$862 05		783	617	5	115	762	11	20

BRISTOL COUNTY—CONTINUED.

TOWNS.	Aggregate Length of the Year, in Months and Days.	Average Length as returned by Com- mittee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including wages of Teachers, board, fuel, care of area and school- rooms, for the school- year 1870-71.	Amount of board, fuel, &c., voluntarily con- tributed for Public Schools.	Expenses of Superin- tendence and print- ing School Reports.	Salary of Superintend- ent of Public Sch'ls.	Amt of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Funds.	Income of Funds, ap- propriated to Public Schools at the option of the Town, includ- ing Tax on dogs.
			Males.	Females.							
Acushnet, .	72	8	\$31 63	\$26 29	\$2,000 00	-	\$87 00	\$75 00	\$11,000 00	-	-
Attleborough, .	288	8.4	75 00	33 25	10,500 00	-	511 91	-	-	\$450 00	-
Berkley, .	41.10	6.18	40 00	29 70	1,200 00	-	70 00	-	-	-	-
Dartmouth, .	141.5	7.9	43 64	25 50	4,500 00	\$190 00	184 75	-	-	-	-
Dighton, .	72.15	7.6	-	29 06	2,500 00	-	123 95	-	-	-	-
Easton, .	140.5	8.5	62 50	32 87	6,400 00	-	100 00	-	-	-	-
Fairhaven, .	120.10	9.18	126 15	28 48	5,500 00	-	275 00	5,000 00	5,000 00	300 00	-
Fall River, .	677.5	10.15	129 82	39 64	46,200 00	-	442 00	2,000 00	-	-	-
Freetown, .	66 14	8.12	-	28 12	1,500 00	-	85 00	-	-	-	-
Mansfield, .	55 10	6.3	-	30 90	2,405 89	-	95 00	62 50	700 00	42 00	-
New Bedford, .	233.2	10.8	137 93	48 35	53,938 31	-	2,121 64	2,000 00	-	-	-
Norton, .	58.16	7.8	46 66	29 50	2,000 00	-	102 40	-	-	-	-
Raynham, .	56	7	50 00	36 25	2,100 00	-	176 00	-	-	-	-
Rehoboth, .	90	6	-	29 50	2,800 00	-	78 00	-	8,000 00	180 00	-
Seekonk, .	49	6.3	-	26 66	1,200 00	22 00	70 00	-	-	-	-
Somerset, .	55	7.17	59 58	34 99	2,524 89	-	110 00	-	-	-	-
Swansea, .	58	5.16	48 60	28 71	2,062 48	65 00	77 15	60 00	-	-	-
Taunton, .	545.11	9.7	124 06	55 78	30,000 00	-	315 00	2,000 00	8,500 00	850 00	\$69 09
Westport, .	154.10	7.15	41 07	25 00	4,500 00	-	200 00	-	-	-	-
Total, .	8.18	-	\$72 26	\$32 56	\$188,831 07	\$277 00	\$5,174 80	\$6,197 50	\$28,200 00	\$1,822 00	\$69 09

CONTINUED.

Chilmark, .	18	6	\$45 00	\$25 40	\$550 00	-	\$48 00	-	-	-	-
Edgartown, .	56.10	7.1	65 00	22 50	2,000 00	-	200 00	-	-	-	-
Gay Head, .	7	7	45 00	17 00	-	-	18 05	-	-	-	-
Gosnold, .	6	6	-	26 00	125 00	-	8 50	-	-	-	-
Tisbury, .	48	6	45 24	18 96	2,200 00	-	90 00	-	-	-	-
Total, .	6.9	-	\$50 06	\$21 97	\$4,875 00	-	\$504 55	-	-	-	-

BRISTOL COUNTY—CONCLUDED.

TOWNS.	HIGH SCHOOLS.				INCORP. ACADEMIES.			UNINCOR. ACADEMIES AND PRIVATE SCHOOLS.			Town's share of School Fund, payable Janu- ary 25, 1871.	How appropriated.	
	Number.	How supported.	LENGTH.		Salary of Prin- cipal.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.			Aggregate paid for Tuition.
			Months.	Days.									
Acushnet, .	-	Taxation,	-	-	-	-	-	-	-	-	-	\$159 54	Schools.
Attleborough, .	2	-	10	\$1,000 00	-	-	-	-	-	-	-	458 25	"
Berkley, .	-	-	-	-	-	-	-	-	-	-	-	142 49	"
Dartmouth, .	1	Taxation,	9	500 00	-	-	-	-	-	-	-	288 68	"
Dighton, .	-	-	-	-	-	-	-	-	-	-	-	188 85	"
Easton, .	1	Taxation,	10	1,000 00	-	-	-	-	1	16	-	305 18	"
Fairhaven, .	1	Taxation,	9.15	1,230 00	-	-	-	-	-	-	-	228 03	"
Fall River, .	1	Taxation,	10.7	1,600 00	-	-	-	-	2	45	\$900 00	1,579 86	"
Freetown, .	-	-	-	-	-	-	-	-	-	-	-	181 06	"
Mansfield, .	-	-	-	-	-	-	-	-	1	40	450 00	233 61	"
New Bedford, .	1	Taxation,	10.8	1,800 00	1	65	\$7,000 00	20	320	5,500 00	5,500 00	1,138 49	Gen'l purposes.
Norton, .	-	-	-	-	1	106	5,500 00	1	25	100 00	100 00	184 41	Schools.
Raynham, .	-	-	-	-	-	-	-	-	-	-	-	190 56	"
Rehoboth, .	-	-	-	-	-	-	-	-	-	-	-	187 62	"
Seekonk, .	-	-	-	-	-	-	-	-	-	-	-	148 08	"
Somerset, .	-	-	-	-	-	-	-	-	-	-	-	216 29	"
Swansea, .	-	-	-	-	-	-	-	-	-	-	-	171 56	"
Taunton, .	1	Taxation,	10	1,500 00	1	59	2,160 00	2	82	600 00	600 00	1,027 77	"
Westport, .	1	Taxation,	9	800 00	-	-	-	-	-	-	-	231 92	"
Total, .	9	-	-	-	8	230	\$14,660 00	27	478	\$7,550 00	\$7,550 00	\$7,257 85	

ESSEX COUNTY.

TOWNS.	Population—U. S. Census, 1870.	Valuation—1885.	No. of Schools.	Amount expended in 1870 for Erecting School-Houses.	Amount paid for Repairing, &c., in 1870.	No. of different Schools during the School-Year.	Average attendance in all the Public Schools during the School-Year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State between 5 and 16 years of age, May 1, 1870.	Number of different persons employed as Teachers in Public Sch'ls.	
											Males.	Fem.
Amesbury, .	5,581	\$1,677,632	23	\$4,124 32	\$616 42	886	693	12	62	.958	5	22
Andover, .	4,873	2,702,426	19	—	2,100 48	853	672	12	64	688	8	27
Beverly, .	6,507	3,359,216	25	10,425 00	3,550 00	1,192	917	—	69	1,271	2	34
Boxford, .	847	681,942	5	2,000 00	7 00	164	121	1	32	165	4	6
Bradford, .	2,014	832,083	8	—	2,477 05	422	286	—	53	897	2	11
Danvers, .	5,600	2,287,630	19	6,466 64	3,300 00	1,118	831	5	89	1,198	5	27
Essex, .	1,614	912,417	9	—	147 07	354	262	—	72	872	8	9
Georgetown, .	2,088	760,473	10	—	896 00	415	342	8	51	416	1	11
Gloucester, .	15,389	4,505,390	34	1,974 61	3,102 99	3,340	2,465	—	275	3,116	8	87
Groveland, .	1,776	666,119	6	3,500 00	—	291	206	1	6	886	1	8
Hamilton, .	790	481,423	4	—	246 68	134	101	1	31	130	5	4
Haverhill, .	13,092	4,488,107	46	11,786 57	3,935 81	2,268	1,847	8	117	2,166	4	50
Ipswich, .	8,720	1,556,491	12	—	1,269 63	509	417	4	15	572	4	11
Lawrence, .	28,921	11,240,191	56	17,557 85	4,851 79	3,625	2,659	7	169	4,846	4	70
Lynn, .	28,283	10,058,309	51	9,381 12	4,321 42	4,812	3,626	—	182	5,904	6	96
Lynnfield, .	818	604,617	4	—	25 51	192	113	1	24	124	—	5
Manchester, .	1,665	766,888	7	—	250 00	317	222	—	21	298	1	8
Marblehead, .	7,703	2,181,268	19	1,583 00	109 32	1,308	1,086	—	45	1,445	5	25
Methuen, .	2,959	1,292,951	13	—	890 59	659	380	—	67	627	2	14
Middleton, .	1,010	892,445	5	—	808 91	242	227	8	11	238	—	7
Nahant, .	475	517,194	2	—	156 87	97	66	—	8	95	1	1
Newbury, .	1,430	767,849	7	—	15 00	242	147	12	21	216	—	8
Newburyport, .	12,596	7,659,900	85	2,693 76	1,064 97	2,536	1,578	—	149	2,452	9	44

North Andover, .	2,549	\$1,830,829	12	-	\$408 92	488	356	2	58	516	4	13
Peabody, .	7,843	3,819,766	16	\$42,920 00	870 00	1,865	1,022	-	78	1,440	7	25
Rockport, .	3,904	1,279,717	10	479 09	-	763	619	-	191	817	2	24
Rowley, .	1,157	511,171	5	-	250 00	207	133	1	20	214	1	5
Salem, .	24,117	16,192,359	65	43,369 91	2,751 57	4,178	2,618	-	232	5,340	11	83
Salisbury, .	3,776	1,680,089	14	1,851 94	500 00	607	460	10	35	742	6	14
Saugus, .	2,247	1,300,074	9	-	200 00	409	318	2	12	466	-	12
Swampscott, .	1,846	1,449,859	7	-	450 00	842	273	-	27	345	1	6
Topsfield, .	1,213	687,610	5	-	250 00	234	163	11	19	237	3	6
Wenham, .	985	463,558	5	-	-	190	186	4	14	166	4	4
West Newbury, .	2,006	940,919	11	-	186 20	415	382	31	55	431	3	16
Total, .	200,843	\$90,393,467	578	\$159,463 80	\$39,109 70	35,174	25,694	150	2,374	38,639	117	793

ESSEX COUNTY—CONTINUED.

TOWNS.	Aggregate Length of Public Schools for the year, in Months and Days.	Average Length as returned by Com- mittee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including wages of Teachers, board, fuel, care of rooms, for the school- year 1870-71.	Amount of board, fuel, etc., voluntarily con- tributed for Public Schools.	Expenses of Superin- tendence and print- ing School Reports.	Salary of Superintend- ent of Public Sch'ls.	Amt of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Fund.	Income of Funds, ap- propriated to Public Schools at the option of the Town, includ- ing Tax on dogs.
			Males.	Females.							
Amesbury, .	158.6	6.17	\$82 50	\$24 92	\$6,600 00	\$215 00	\$265 00	-	\$102,600 00	-	-
Andover, .	168.12	8.17	133 15	35 00	9,576 42	-	619 75	-	\$6,017 23	-	-
Beverly, .	250	10	125 00	40 28	12,000 00	-	238 00	\$1,500 00	3,000 00	180 00	-
Boxford, .	44	8.16	50 00	36 50	1,200 00	-	258 75	-	2,437 00	145 70	\$58 10
Bradford, .	80	10	113 33	36 06	4,500 00	-	188 00	-	-	-	-
Danvers, .	172.10	9.8	89 00	32 30	9,599 00	-	560 78	-	-	-	300 00
Essex, .	68.17	7.13	66 98	33 26	2,500 00	-	167 40	-	-	-	-
Georgetown, .	89.5	8.18	111 11	31 06	3,900 00	-	229 00	-	-	-	-
Gloucester, .	307.10	9.1	100 10	31 98	29,200 00	390 80	2,357 20	2,000 00	-	-	-
Groveland, .	54	9	50 00	35 00	1,980 00	-	81 00	-	-	-	-
Hamilton, .	29.10	7.10	51 20	24 00	1,000 00	-	53 31	-	-	-	-
Haverhill, .	396.13	7.16	110 42	48 78	26,000 00	-	820 25	-	-	-	521 18
Ipswich, .	108.10	9.1	61 25	26 50	4,400 00	-	220 00	1,500 00	8,200 00	530 00	-
Lawrence, .	560	10	221 67	47 86	46,063 66	-	1,602 00	-	-	-	-
Lynn, .	485	10	158 34	47 47	54,422 55	-	1,780 01	-	-	-	-
Lynnfield, .	37.8	9.7	-	33 17	1,200 00	-	37 21	-	-	-	-
Manchester, .	72.13	10.8	80 00	26 85	2,800 00	-	160 00	-	-	-	-
Marblehead, .	190.10	10.10	112 50	35 13	11,000 00	200 00	90 00	-	6,550 00	559 04	-
Methuen, .	118.10	9.2	97 00	35 86	5,500 00	20 00	276 00	-	-	-	196 00
Middleton, .	47.10	9.10	-	29 92	1,700 00	-	83 00	-	-	-	-
Nahant, .	21	11.5	75 00	41 66	1,700 00	-	78 00	-	-	-	-
Newbury, .	54.5	7.15	-	25 00	1,400 00	40 00	00 00	-	20,000 00	1,200 00	-
Newburyport, .	270	10	97 50	36 64	24,000 00	-	126 00	-	65,000 00	4,004 04	-

North Andover, .	116	9.12	\$88 31	\$30 21	\$6,000 00	-	\$255 00	-	\$640 00	\$38 40	-
Peabody, .	156 10	9 16	122 45	42 15	19,000 00	-	586 00	-	8,000 00	210 00	-
Rockport, .	87.13	8.15	56 00	21 52	4,963 78	-	353 00	-	-	-	\$107 00
Rowley, .	38.1	7.12	49 00	24 40	1,200 00	-	80 00	-	-	-	-
Salem, .	628.8	10.15	144 70	47 94	49,597 99	-	2,541 46	\$2,500 00	4,000 00	200 00	-
Salisbury, .	124.17	8.17	61 00	26 00	4,950 00	-	280 00	-	-	-	167 12
Saugus, .	90	10	-	34 22	8,879 00	-	200 00	-	-	-	-
Swampscott, .	70	10	120 00	45 00	5,500 00	-	180 00	-	-	-	-
Topsfield, .	40.16	8.4	53 34	28 37	1,500 00	-	51 16	30 00	-	-	-
Wenham, .	42.5	8.9	57 50	33 34	1,800 00	-	78 87	-	-	-	-
West Newbury, .	88	8	44 33	30 00	2,915 13	-	179 00	-	-	-	-
Total, .	9.2	-	\$92 75	\$34 07	\$368,347 53	\$865 80	\$15,128 15	\$7,530 00	\$215,427 00	\$13,084 41	\$1,349 40

ESSEX COUNTY—CONCLUDED.

TOWNS.	HIGH SCHOOLS.				INCORP. ACADEMIES.			UNINCORP. AND PRIVATE		Town's share of School Fund, payable Jan. 1st, 1871.	How appropriated.
	Number.	How supported.	Lessor.		Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.		
			Months.	Days.							
Amesbury, .	1	Taxation,	10		2	800	\$13,607 20	5	185	\$426 00	Schools.
Andover, .	1	Taxation,	10		-	-	-	3	81	525 60	"
Beverly, .	1	Taxation,	10		-	-	-	2	85	425 00	"
Boxford, .	-	-	-		-	-	-	-	-	-	"
Bradford, .	1	Taxation,	10		1	125	6,522 58	-	-	-	"
Danvers, .	1	Taxation,	10		-	-	-	1	65	475 00	"
Essex, .	-	-	-		-	-	-	1	20	12 00	"
Georgetown, .	1	Taxation,	9		-	-	-	-	-	-	"
Gloucester, .	1	Taxation,	10.5		-	-	-	2	40	500 00	"
Groveland, .	-	-	-		-	-	-	-	-	-	"
Hamilton, .	-	-	-		-	-	-	-	-	-	"
Haverhill, .	1	Taxation,	10.5		-	-	-	8	75	825 00	"
Ipwich, .	1	Taxation,	10		-	-	-	8	100	2,200 00	"
Lawrence, .	1	Taxation,	10		-	-	-	8*	1,200	-	"
Lynn, .	1	Taxation,	10		-	-	-	8	382	9,389 00	"
Lynnfield, .	-	-	-		-	-	-	-	-	-	"
Manchester, .	1	Taxation,	10.10		-	-	-	1	20	120 00	"
Marblehead, .	1	Taxation,	10.10		-	-	-	2	75	450 00	"
Methuen, .	1	Taxation,	9.10		-	-	-	-	-	-	"
Middleton, .	-	-	-		-	-	-	-	-	-	"
Nahant, .	-	-	-		-	-	-	-	-	-	"
Newbury, .	-	-	-		1	40	800 00	-	-	-	Town Treas. Schools.
Newburyport, .	1	Taxation,	10		1	40	-	10	146	760 00	"

North Andover, .	1	Taxation,	10	\$1,050 00	-	-	-	-	-	-	-	-	\$241 73	Schools.
Peabody, .	1	Taxation,	10.5	1,800 00	-	-	-	-	-	-	-	-	508 12	"
Rockport, .	1	Taxation,	9	600 00	-	-	-	-	-	-	-	-	328 88	"
Rowley, .	-	-	-	-	-	-	-	-	-	-	1	36	163 17	"
Salem, .	1	Taxation,	10.5	2,500 00	-	-	-	-	-	-	28	1,388	1,563 32	General use.
Salisbury, .	1	Taxation,	9.2	720 00	-	-	-	-	-	-	-	-	306 00	Schools.
Saugus, .	-	-	-	-	-	-	-	-	-	-	-	-	226 83	Gen'l purposes.
Swampscott, .	-	-	-	-	-	-	-	-	-	-	-	-	194 47	Schools.
Topsfield, .	-	-	-	-	-	-	-	-	-	-	-	-	165 96	"
Wenham, .	-	-	-	-	-	-	-	-	-	-	-	-	148 92	"
West Newbury, .	-	-	-	-	-	-	-	-	-	-	-	-	213 48	"
Total, .	20	-	-	-	6	505	\$20,729 78	73	8,748	\$32,615 60	\$14,073 20			

* Catholics.

FRANKLIN COUNTY.

TOWNS.	Population—U. S. Census, 1870.	Valuation—1865.	No. of Schools.	Amount expended in 1870 for erecting School-Houses.	Amount paid for Repairs, etc., in 1870.	No. of different Schools during the School-year.	Average attendance in all the Public Schools during the School-year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State between 5 and 15 years of age, May 1, 1870.	Number of different persons employed as Teachers in Public Schools.	
											Males.	Fem.
Ashfield, .	1,180	\$611,869	14	-	\$15 00	233	174	9	48	214	-	21
Barnardston, .	961	484,893	6	-	10 00	151	117	5	16	156	1	10
Buckland, .	1,946	526,468	10	-	476 17	382	281	9	30	399	1	15
Charlemont, .	1,005	367,216	8	-	50 75	204	149	2	37	193	1	12
Coleraine, .	1,742	637,954	13	-	200 00	357	266	12	60	313	3	21
Conway, .	1,460	703,919	13	\$1,241 80	25 00	343	219	13	34	271	-	16
Deerfield, .	3,632	1,215,423	19	-	2,266 17	728	469	11	74	602	4	21
Erving, .	579	173,229	5	-	7 00	117	82	10	14	105	2	10
Gill, .	653	390,569	6	-	50 00	130	97	7	25	122	1	8
Greenfield, .	3,589	1,899,806	13	-	1,825 00	560	420	-	82	658	3	27
Hawley, .	672	182,638	9	-	-	160	113	11	16	130	3	12
Heath, .	613	232,551	8	-	-	179	116	9	37	110	3	10
Leverett, .	877	284,644	6	-	539 30	177	123	6	22	146	1	10
Leyden, .	518	278,647	5	-	10 00	108	87	3	16	115	4	6
Monroe, .	201	79,375	2	-	10 25	55	28	1	10	41	-	5
Montague, .	2,224	606,787	13	-	128 25	433	288	14	37	431	1	18
New Salem, .	987	336,476	8	-	-	182	157	9	29	158	-	11
Northfield, .	1,720	712,054	12	-	-	360	279	15	60	380	4	12
Orange, .	2,001	599,243	14	485 00	450 00	390	289	10	52	397	3	22
Rowe, .	681	180,425	6	-	6 00	145	90	3	28	137	1	10
Shelburne, .	1,682	822,020	10	-	125 00	308	220	2	25	351	2	17
Shutesbury, .	614	219,250	7	-	-	187	103	10	18	109	3	11
Sunderland, .	832	413,827	6	-	30 00	210	134	3	34	165	-	9

Warwick, . . .	769	\$229,558	8	-	\$45 95	184	124	3	22	124	1	12
Wendell, . . .	539	201,657	5	-	10 10	79	63	-	-	79	-	9
Whately, . . .	1,068	665,972	6	-	-	188	188	3	30	167	2	7
Total, . . .	32,635	\$13,048,120	232	\$1,676 80	\$6,279 94	6,500	4,621	180	851	6,068	44	342

HAMPDEN COUNTY.

Agawam, . . .	2,001	\$816,850	8	-	\$40 00	319	230	7	16	359	1	14
Blandford, . . .	1,026	529,150	12	-	234 38	234	106	11	33	224	1	18
Brimfield, . . .	1,286	719,750	8	-	319 02	241	188	7	12	218	2	15
Chester, . . .	1,253	445,900	12	\$910 00	79 20	285	199	5	40	241	1	19
Chicopee, . . .	9,607	3,128,220	25	13,835 68	-	1,603	953	26	112	1,764	4	33
Granville, . . .	1,293	516,277	12	-	-	302	217	11	37	229	-	19
Holland, . . .	344	131,000	4	-	26 33	93	60	5	9	84	3	4
Holyoke, . . .	10,733	2,579,250	30	-	1,500 00	1,141	868	23	55	1,940	3	40
Longmeadow, . . .	1,342	1,016,500	10	-	637 43	274	200	6	35	267	1	13
Ludlow, . . .	1,138	455,050	9	-	33 50	225	155	10	28	233	2	11
Monson, . . .	3,204	1,316,700	13	1,900 00	149 12	642	397	17	53	542	-	17
Montgomery, . . .	318	158,850	5	-	4 50	68	45	4	8	69	-	8
Palmer, . . .	3,631	1,254,000	17	675 00	768 09	847	459	17	32	776	3	25
Russell, . . .	635	212,800	6	494 00	-	136	105	1	6	136	-	9
Southwick, . . .	1,100	604,200	10	4,000 00	637 00	311	162	19	52	243	4	17
Springfield, . . .	26,703	13,379,212	87	12,444 57	4,027 70	4,679	3,407	25	287	4,232	11	103
Tolland, . . .	509	298,583	6	-	-	116	71	12	17	115	1	8
Wales, . . .	831	254,600	5	-	-	141	112	5	25	135	1	6
Westfield, . . .	6,519	3,244,600	28	-	2,000 00	1,234	910	19	199	1,131	4	39
W. Springfield, . . .	2,606	1,319,550	15	21,319 15	129 91	453	340	6	31	431	-	19
Wilbraham, . . .	2,330	872,100	13	2,000 00	-	875	282	16	25	418	3	18
Total, . . .	78,409	\$33,253,177	385	\$57,578 40	\$10,536 18	13,719	9,466	252	1,107	13,787	45	455

FRANKLIN COUNTY—CONTINUED.

TOWNS.	Aggregate Length of the Year, in Months and Days.	Average Length as returned by Com- mittee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including board, fuel, care of rooms, for the school- year 1870-71.	Amount of board, fuel, etc., voluntarily con- tributed for Public Schools.	Expenses of Superin- tendence and print- ing School Reports.	Salary of Superintend- ent of Public Sch'ls.	Amt of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Funds.	Income of Funds, ap- propriated to Public Schools at the option of the Town, includ- ing Tax on dogs.
			Males.	Females.							
Ashfield, .	79 12	5.14	-	\$24 10	\$2,000 00	\$204 00	\$80 00	-	\$10,716 67	\$1,250 00	-
Barnardston, .	40	6.13	\$47 00	27 85	750 00	87 00	75 50	-	915 00	54 89	\$182 30
Buckland, .	62.10	6.5	29 00	27 88	1,500 00	60 00	115 00	-	800 00	48 00	-
Charlemont, .	45	5.12	51 00	29 22	1,200 00	-	101 00	-	300 00	25 00	-
Coleraine, .	93	7.8	31 00	28 47	2,000 00	150 00	118 00	-	10,000 00	600 00	-
Conway, .	77.15	5.19	-	80 66	2,500 00	102 00	121 15	-	-	-	-
Deerfield, .	129 5	6.16	65 52	32 26	4,930 00	279 19	204 67	-	-	-	-
Erving, .	87.8	7.9	53 00	27 50	1,000 00	-	52 50	-	-	-	54 00
Gill, .	87.10	6.5	52 00	27 86	700 00	390 00	44 00	-	-	-	-
Greenfield, .	106	8.15	125 00	32 00	7,300 00	-	415 00	-	-	-	-
Hawley, .	54	6	28 00	24 50	900 00	-	39 00	-	400 00	24 00	-
Heath, .	48	6	26 67	21 28	1,000 00	-	68 00	-	-	-	-
Leverett, .	42.2	7.1	36 17	28 75	1,000 00	-	88 50	-	-	-	-
Leyden, .	30	6	36 25	24 00	600 00	845 00	38 00	-	-	-	-
Monroe, .	14	7	-	21 75	250 00	-	16 75	-	-	-	12 00
Montague, .	78	6	60 00	26 58	2,500 00	-	80 90	-	-	-	-
New Salem, .	56	7	-	22 48	1,500 00	-	78 00	-	19,500	1,200 00	-
Northfield, .	78 10	6.11	47 00	27 00	2,500 00	-	95 00	-	-	66 00	-
Orange, .	79 15	5.18	49 00	23 50	2,500 00	-	175 00	-	-	-	-
Rowe, .	86	6	25 00	24 27	800 00	-	52 25	-	200 00	12 00	-
Shelburne, .	68	6.16	37 40	31 09	2,500 00	240 00	115 00	-	-	-	-
Shutesbury, .	43.5	6.3	28 88	20 72	1,000 00	-	50 00	-	267 83	16 00	-
Sunderland, .	41	6	-	33 86	1,500 00	-	90 00	-	-	-	-

Warwick, . . .	51.18	6.10	\$28 00	\$21 83	\$1,200 00	-	\$89 68	\$500 00	\$30 00	\$56 00
Wendell, . . .	32	6.8	-	22 00	800 00	-	46 26	540 00	41 40	-
Whately, . . .	38.18	6.9	34 00	29 00	1,300 00	-	85 00	-	-	-
Total, . . .	69	-	\$44 46	\$26 13	\$45,780 00	-	\$2,528 26	\$44,139 00	\$3,867 29	\$254 80

HAMPDEN COUNTY—CONTINUED.

Agawam, . . .	68	7.9	\$24 00	\$28 00	\$1,850 00	\$50 00	\$120 00	-	-	-
Blandford, . . .	77.10	6.9	42 00	22 60	1,000 00	756 61	15 00	\$2,450 00	\$147 00	\$93 80
Brimfield, . . .	54.3	7.10	33 00	28 84	1,800 00	-	86 25	35,000 00	2,200 00	-
Chester, . . .	76	6.7	24 00	23 00	2,000 00	125 00	79 50	700 00	38 00	-
Chicopee, . . .	228.15	9.3	127 50	39 27	17,703 54	-	625 00	-	-	699 71
Granville, . . .	72 15	6.1	-	24 77	1,916 52	-	58 00	-	-	-
Holland, . . .	24	6	26 56	19 80	400 00	-	27 00	-	-	-
Holyoke, . . .	282.6	9.8	140 00	36 89	18,700 00	-	50 00	-	-	-
Longmeadow, . . .	83.8	8.7	60 00	34 26	3,000 00	-	129 00	731 00	44 86	134 22
Ludlow, . . .	51	6	45 00	28 67	1,200 00	-	98 00	-	-	-
Monson, . . .	101.10	6	-	30 25	4,000 00	-	139 55	25,500 00	2,100 00	-
Montgomery, . . .	30	6	-	22 50	700 00	90 00	37 75	-	-	42 00
Palmer, . . .	120	7.1	44 00	31 28	5,000 00	-	470 00	850 00	56 14	-
Russell, . . .	36	6	-	24 17	1,000 00	-	31 00	-	-	-
Southwick, . . .	74.8	7.9	40 40	23 33	900 00	20 00	112 00	5,618 01	946 86	92 96
Springfield, . . .	870	10	163 33	46 60	67,714 22	-	50 00	-	-	-
Tolland, . . .	36.5	6.3	30 00	26 00	600 00	215 60	39 50	-	-	33 00
Wales, . . .	39.16	6.3	28 00	26 67	700 00	-	45 00	-	-	-
Westfield, . . .	244	9	136 00	33 50	16,500 00	-	600 00	46,000 00	600 00	-
W. Springfield, . . .	143.15	9.2	-	34 85	6,000 00	-	281 88	14,133 00	840 00	-
Wilbraham, . . .	89.15	6.18	35 00	24 79	2,500 00	24 00	110 00	1,705 25	102 31	-
Total, . . .	8.6	-	\$62 42	\$29 05	\$155,184 28	\$1,281 21	\$3,204 43	\$3,500 00	\$7,075 17	\$1,095 69

How appropriated.

[illegible]

Warwick, .	-	-	-	-	-	-	-	-	-	-	-	\$138 29	Schools.
Wendell, .	-	-	-	-	-	-	-	-	-	-	-	112 39	"
Whately, .	-	-	-	-	-	-	-	-	-	-	-	157 31	"
Total, .	8	-	-	-	-	6	220	\$5,595 86	19	322	\$3,456 00	\$4,335 42	

HAMPDEN COUNTY—CONCLUDED.

Agawam,	.	-	-	-	-	-	-	-	-	-	20	\$150 00	\$179 38	Schools.
Blandford,	.	-	-	-	-	-	-	-	-	-	-	-	167 64	"
Brimfield,	.	1	Endowment,	10	\$1,200 00	-	-	-	-	-	-	-	169 88	"
Chester,	.	-	-	-	-	-	-	-	1	30	100 00	176 31	"	"
Chicopee,	.	2	Taxation,	10*	{ 1,800 00 } { 2,000 00 }	-	-	-	†1	350	†	510 64	"	"
Granville,	.	-	-	-	-	-	-	-	2	80	100 00	183 86	"	"
Holland,	.	-	-	-	-	-	-	-	-	-	-	-	122 64	"
Holyoke,	.	1	Taxation,	9.15	1,600 00	-	-	-	†1	225	†	589 19	"	"
Longmeadow,	.	-	-	-	-	-	-	-	-	-	-	-	175 19	"
Ludlow,	.	-	-	-	-	-	-	-	-	-	-	-	163 47	"
Monson,	.	1	Taxation,	10	1,500 00	-	96	\$2,488 71	2	35	600 00	233 62	"	"
Montgomery,	.	-	-	-	-	-	-	-	-	-	-	-	120 68	"
Palmer,	.	1	Taxation,	7	940 00	-	-	-	-	-	-	-	307 98	"
Russell,	.	-	-	-	-	-	-	-	-	-	-	-	134 66	"
Southwick,	.	1	Taxation,	4.5	276 25	-	-	-	1	6	50 00	180 79	"	"
Springfield,	.	1	Taxation,	10	2,400 00	-	-	-	13	325	10,000 00	1,261 73	"	"
Tolland,	.	-	-	-	-	-	-	-	-	-	-	-	133 54	"
Wales,	.	-	-	-	-	-	-	-	1	16	70 00	137 74	"	"
Westfield,	.	1	Taxation,	10	1,900 00	-	-	-	1	30	1,000 00	425 66	"	"
W. Springfield,	.	1	Taxation,	10	727 50	-	-	-	2	35	250 00	240 04	"	"
Wilbraham,	.	-	-	-	-	-	300	12,000 00	1	30	475 00	214 05	"	"
Total,	.	10	-	-	-	2	396	\$14,488 71	28	1,132	\$12,795 00	\$5,828 69		

* Months each.

† Catholic Convent.

‡ Free.

HAMPSHIRE COUNTY.

T O W N S.	Population—U. S. Census, 1870.	Valuation—1865.	No. of Schools.	Amount expended in 1870 for Erecting School-Houses.	Amount paid for Re- pairing, &c., in 1870.	No. of different Sch- ools during the School- year.	Average attendance in all the Public Sch's during the School- year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State be- tween 5 and 15 years of age, May 1, 1870.	Number of dif- ferent persons employed as Teachers in Public Sch's.	
											Males.	Fem.
Amherst, .	4,035	\$1,860,457	18	\$9,964 78	\$1,077 12	819	592	19	144	661	3	27
Belchertown, .	2,428	1,108,591	20	1,380 00	800 00	516	895	17	68	450	9	18
Chesterfield, .	811	372,790	9	800 00	25 00	193	117	5	26	154	3	12
Cummington, .	1,037	342,842	10	-	15 00	225	159	3	32	220	2	12
Easthampton, .	3,620	1,700,599	14	-	257 89	811	422	9	81	768	-	21
Enfield, .	1,023	610,644	8	-	17 78	175	127	4	21	151	1	12
Goshen, .	368	152,796	4	-	10 00	84	51	2	12	70	1	7
Granby, .	863	470,125	9	-	165 00	216	143	8	35	157	-	12
Greenwich, .	665	261,416	6	-	274 55	123	88	6	26	103	-	14
Hadley, .	2,301	1,279,320	13	3,500 00	1,189 14	558	840	5	45	426	-	18
Hatfield, .	1,594	1,442,691	9	4,330 00	140 25	340	230	10	22	376	1	15
Huntington, .	1,156	409,895	8	-	143 76	289	188	9	23	224	1	18
Middlefield, .	728	351,881	7	-	850 00	148	125	9	17	172	2	7
Northampton, .	10,160	4,789,965	46	2,200 00	1,627 00	1,839	1,456	8	201	1,948	6	77
Pelham, .	678	197,457	4	450 00	18 00	155	85	5	21	129	1	5
Plainfield, .	521	289,097	6	-	516 50	152	79	6	28	94	2	6
Prescott, .	541	221,712	6	-	50 00	110	72	3	15	92	2	11
South Hadley, .	2,840	1,108,491	11	37,600 81	96 49	530	406	5	64	533	2	16
Southampton, .	1,159	502,448	8	1,379 53	120 70	251	144	1	49	228	2	11
Ware, .	4,259	1,808,545	21	820 73	523 88	1,081	688	9	91	857	6	26
Westhampton, .	587	291,384	6	900 00	29 54	177	124	10	15	137	-	9

1872.]

PUBLIC DOCUMENT—No. 2.

xxvii

Williamsburg,	2,159	\$1,085,693	14	\$1,000 00	\$600 00	570	362	12	31	528	-	10
Worthington,	860	409,655	10	-	25 00	200	140	9	29	197	8	14
Total, .	44,888	\$20,510,994	267	\$84,384 85	\$8,567 60	9,557	6,483	174	1,096	8,665	47	878

HAMPSHIRE COUNTY—CONTINUED.

TOWNS.	Aggregate Length of Public Schools for the year, in Months and Days.	Average Length as returned by Com- mittee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including wages of Teachers, board, fuel, care of rooms, for the school- year 1870-71.	Amount of board, fuel, etc., voluntarily con- tributed for Public Schools.	Expenses of Superin- tendence and print- ing School Reports.	Salary of Superintend- ent of Public Sch'ls.	Am't of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Funds.	Income of Funds, ap- propriated to Public Schools at the option of the Town, includ- ing Tax on dogs.
			Males.	Females.							
Amherst, .	149.12	8.6	\$128 00	\$35 00	\$8,000 00	\$300 00	\$207 00	\$1,500 00	-	-	-
Belchertown, .	128	6.8	51 20	30 29	5,000 00	-	200 00	-	-	-	-
Chesterfield, .	60.9	6.14	31 67	22 78	1,000 00	519 00	51 75	-	\$1,100 00	\$71 00	-
Cummington, .	62.15	6.5	36 00	29 00	1,200 00	600 00	102 58	-	-	-	-
Easthampton, .	128.5	9.3	-	30 50	6,000 00	-	200 00	-	75,000 00	5,000 00	-
Enfield, .	54.10	6.16	32 00	31 80	1,500 00	-	66 75	-	-	-	-
Goshen, .	27.6	6.17	28 00	22 50	500 00	188 00	32 75	-	-	-	-
Granby, .	67.15	7.10	-	26 63	1,925 00	-	57 00	-	-	-	-
Greenwich, .	39.10	6.1	-	24 21	1,000 00	-	66 00	-	500 00	30 00	-
Hadley, .	99.4	7.12	-	28 25	3,300 00	-	122 04	-	29,066 00	2,322 00	-
Hatfield, .	69	7.13	50 00	32 25	2,500 00	-	137 00	-	-	-	-
Huntington, .	51	6.8	32 00	26 77	1,400 00	86 00	85 20	-	-	-	-
Middlefield, .	42	6	28 00	23 07	900 00	-	42 00	-	-	-	\$90 57
Northampton, .	455.5	9.18	99 16	38 14	24,080 00	-	24 00	2,000 00	2,906 87	199 63	-
Pelham, .	24	6	40 00	26 67	1,000 00	-	88 00	-	-	-	-
Plainfield, .	36	6	35 00	22 00	700 00	-	43 50	-	-	-	-
Prescott, .	88	6	84 16	23 98	900 00	-	65 00	-	-	-	86 00
South Hadley, .	95 10	8.14	120 00	86 00	5,000 00	25 00	133 00	-	2,000 00	120 00	155 80
Southampton, .	61 5	7.13	49 00	34 14	1,850 00	22 00	80 00	-	1,775 00	124 25	-
Ware, .	161.19	7.14	62 25	31 25	7,000 00	7 00	475 33	-	-	-	181 37
Westhampton, .	55	7.15	-	28 00	1,450 00	-	61 00	-	-	-	-

Williamsburg,	116.13	86	-	\$34 00	\$3,000 00	-	\$265 00	-	\$21,000 00	\$2,000 00	-
Worthington,	64.15	6.9	\$37 00	28 00	1,000 00	\$900 00	51 50	-	1,961 67	143 20	\$178 22
Total, .	7.16	-	\$52 55	\$29 92	\$80,205 00	\$2,597 00	\$2,651 40	\$3,500 00	135,309 54	\$10,010 08	\$641 96

HAMPSHIRE COUNTY—CONCLUDED.

TOWNS.	HIGH SCHOOLS.				IN CORP. ACADEMIES.			UNINCOR. ACADEMIES AND PRIVATE SCHOOLS.			Town's share of School Fund, payable Janu- ary 25, 1871.	Schools.	How appropriated.	
	Number.	How supported.	Length		Salary of Prin- cipal.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.				Aggregate paid for Tuition.
			Months.	Days.										
Amherst, .	1	Taxation,	9.5		\$1,200 00	-	-	-	1	10	\$100 00	\$290 95	"	
Belchertown,	1	Taxation,	9		1,000 00	-	-	-	-	-	-	241 72	"	
Chesterfield,	-	-	-		-	-	-	-	-	-	-	145 84	"	
Cummington,	-	-	-		-	-	-	-	-	-	-	162 84	"	
Easthampton,	1	Taxation,	9.10		800 00	1	160	\$7,481 50	1	25	350 00	324 76	"	
Enfield, .	-	-	-		-	-	-	-	-	-	-	138 29	"	
Goshen, .	-	-	-		-	-	-	-	-	-	-	118 45	"	
Granby, .	1	Taxation,	6.10		325 00	-	-	-	-	-	-	151 43	"	
Greenwich, .	-	-	-		-	-	-	-	-	-	-	127 67	"	
Hadley, .	1	Not by Tax.,	10 00		1,000 00	1	38	-	1	5	500 00	222 45	"	
Hatfield, .	-	-	-		-	-	-	-	-	-	-	182 18	"	
Huntington,	-	-	-		-	-	-	-	-	-	-	156 75	"	
Middlefield,	-	-	-		-	-	-	-	1	-	-	145 00	"	
Northampton,	1	Taxation,	10.5		2,250 00	-	-	-	12	72	2,160 00	649 88	"	
Pelham, .	-	-	-		-	-	-	-	1	10	45 00	134 38	"	
Plainfield, .	-	-	-		-	-	-	-	-	-	-	125 16	"	
Prescott, .	-	-	-		-	-	-	-	1	14	60 00	126 88	"	
South Hadley,	-	-	-		-	-	-	-	-	-	-	244 52	"	
Southampton,	1	Taxation,	6		321 00	1	250	2,500 00	-	-	-	169 05	"	
Ware, .	2	Taxation,	{ 10		1,100 00 }	-	-	-	-	-	-	295 12	"	
Westhampton,	-	-	{ 6		262 00 }	-	-	-	-	-	-	139 97	"	

How appropriated.

MIDDLESEX COUNTY.

TOWNS.	Population—U. S. Census, 1870.	Valuation—1863.	No. of Schools.	Amount expended in 1870 for Erecting School-Houses.	Amount paid for Renting, &c., in 1870.	No. of different Schools during the School-year.	Average attendance in all the Public Schools during the School-year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State between 5 and 15 years of age, May 1, 1870.	Number of different persons employed as Teachers in Public Schools.	
											Males.	Fem.
Acton,	1,593	\$854,719	11	\$3,100 00	\$75 00	354	271	4	65	304	1	16
Arlington,	3,261	2,833,684	13	-	392 44	589	508	-	47	675	4	13
Ashby,	994	508,393	9	-	175 00	239	164	7	35	200	3	12
Ashland,	2,186	632,632	9	916 17	526 50	472	309	3	45	394	3	14
Ayer,	-	-	-	-	-	-	-	-	-	-	-	-
Bedford,	849	489,123	6	-	123 88	191	122	7	14	162	-	10
Belmont,	1,513	3,521,429	7	-	580 98	340	242	5	24	273	1	12
Bill-rica,	1,833	1,086,563	9	10,000 00	-	304	230	8	9	355	-	14
Boxborough,	338	238,592	4	1,534 38	25 00	99	72	4	26	69	1	6
Brighton,	4,967	3,812,694	17	-	4,732 74	915	872	-	7	847	4	23
Burlington,	626	408,136	5	-	24 15	120	104	2	10	103	1	5
Cambridge,	39,634	25,897,971	30	26,882 74	8,382 10	9,442	5,888	-	615	8,086	12	159
Carlisle,	569	354,122	5	-	157 75	120	100	3	25	115	1	6
Charlestown,	28,323	18,292,544	46	76,345 28	5,607 15	7,315	4,557	-	314	6,081	16	105
Chelmsford,	2,374	1,546,508	14	4,200 00	1,200 00	622	385	14	58	461	2	17
Concord,	2,412	1,658,881	12	-	476 57	425	317	2	38	421	2	19
Dracut,	2,078	1,109,304	13	1,150 00	-	429	279	15	8	383	-	16
Dunstable,	471	391,146	5	-	5 00	84	66	4	11	85	-	9
Everett,	2,220	-	9	-	1,410 86	542	341	2	30	482	3	9
Frammingham,	4,968	2,799,308	20	-	1,750 00	954	659	12	73	744	2	24
Groton,	3,584	1,553,920	19	30,000 00	46 46	967	534	44	118	749	8	23
Holliston,	3,073	1,502,682	16	-	805 00	742	512	26	98	665	8	22
Hopkinton,	4,410	1,595,257	22	-	-	1,015	804	33	21	1,076	3	30
Hudson,	3,389	-	12	-	499 86	786	515	8	49	677	1	14

Wilmington, .	2,277	\$1,747,459	10	-	863	292	6	34	330	8	5
Lincoln, .	791	606,833	5	\$8,000 00	158	118	4	23	148	-	5
Littleton, .	988	682,380	7	3,860 00	257	175	13	35	204	-	12
Lowell, .	40,928	20,980,041	61	88,150 65	7,164	4,617	-	595	6,437	14	115
Malden, .	7,367	4,040,431	28	7,100 00	1,447	1,102	1	93	1,417	4	28
Marlborough, .	8,474	2,580,622	29	5,652 48	1,811	1,128	19	84	1,877	5	36
Maynard,† .	-	-	-	-	-	-	-	-	-	-	-
Medford, .	5,717	5,491,054	19	-	1,110	901	-	15	1,117	6	18
Melrose, .	3,414	1,704,583	13	-	585	539	-	15	642	1	15
Natick, .	6,404	1,841,121	24	-	1,315	1,053	7	58	1,428	3	36
Newton, .	12,825	9,800,738	51	46,575 00	2,448	1,979	1	248	2,386	10	60
No. Reading, .	942	577,389	6	-	185	136	5	18	178	-	8
Pepperell, .	1,842	724,405	10	1,589 20	361	240	8	37	360	1	15
Reading, .	2,664	1,293,056	14	-	550	483	6	82	547	1	25
Sherborn, .	1,062	869,539	8	2,200 00	275	221	2	50	209	1	10
Shirley, .	1,451	676,275	9	-	399	225	10	64	306	6	9
Somerville, .	14,685	5,683,244	52	-	2,739	2,348	-	161	2,570	7	58
Stoneham, .	4,513	1,383,637	15	21,000 00	760	609	10	80	790	1	19
Stow, .	1,813	764,278	7	-	338	236	10	62	387	-	8
Sudbury, .	2,091	1,052,778	9	-	469	268	8	84	379	1	17
Tewksbury, .	1,944	747,624	7	-	260	164	9	28	242	-	12
Townsend, .	1,962	737,852	12	10,598 24	359	299	17	77	372	3	16
Tyngsborough, .	629	848,137	8	-	133	87	5	15	107	1	6
Wakefield, .	4,135	1,778,786	13	-	791	520	2	52	737	1	16
Waltham, .	9,065	5,552,109	25	6,500 00	1,520	1,291	16	96	1,420	6	38
Watertown, .	4,326	2,757,957	13	-	751	591	-	86	876	4	18
Wayland, .	1,240	658,073	7	-	261	174	9	35	237	-	15
Westford, .	1,803	998,488	11	1,800 00	382	228	14	24	368	1	16
Weston, .	1,261	1,103,274	7	-	224	174	5	43	196	1	10
Wilmington, .	866	563,181	5	1,649 00	172	128	3	16	151	-	8
Winchester, .	2,645	1,455,772	11	-	529	446	4	54	592	2	13
Woburn, .	8,560	4,986,549	33	20,144 10	1,651	1,412	11	135	1,844	5	37
Total, .	274,353	\$155,324,723	842	\$378,947 24	56,828	39,598	403	4,134	52,211	159	1,285

* Incorporated in 1871. Returns included in Groton and Shirley.
† Incorporated in 1871. Returns included in Stow and Sudbury.

† Incorporated in 1870. Returns included in Malden.

MIDDLESEX COUNTY—CONTINUED.

TOWNS.	Aggregate Length of Public Schools for the Year, in Months and Days.	Average Length as returned by Com- mittee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including board, fuel, care of rooms, for the school- year 1870-71.	Amount of board, fuel, etc., voluntarily con- tributed for Public Schools.	Expenses of Superin- tendence by School Committees and print- ing School Reports.	Salary of Superintend- ent of Public Schools.	Am't of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Funds.	Income of Funds, ap- propriated to Public Schools at the option of the Town, includ- ing Tax on dogs.
			Males.	Females.							
Acton,	75.10	6.19	\$55 00	\$29 50	\$2,325 00	-	\$100 00	\$85 00	\$5,354 00	\$809 82	\$89 25
Arlington,	133.10	10.10	150 71	50 39	11,457 59	-	65 00	300 00	-	-	-
Ashby,	53.12	5.19	51 00	25 50	1,200 00	-	40 00	50 00	-	-	-
Ashland,	69.2	7.13	100 00	31 62	4,000 00	-	209 46	-	-	-	-
Ayer,	-	-	-	-	-	-	-	-	-	-	-
Bedford,	47	7.16	-	27 17	1,300 00	-	113 50	-	-	-	70 06
Belmont,	70	10	124 50	38 68	6,150 00	-	345 00	-	-	-	-
BillERICA,	66 8	7.16	-	32 20	2,600 00	-	129 33	-	21,000 00	1,260 00	-
Boxborough,	26	6.10	35 00	23 50	750 70	-	60 00	25 00	-	-	-
Brighton,	174 5	10.5	159 32	41 75	17,200 00	-	700 00	-	-	-	-
Burlington,	32 10	6.4	44 00	27 20	1,100 00	-	80 00	-	-	-	-
Cambridge,	295	10	212 17	58 88	110,951 98	-	365 00	2,800 00	10,000 00	894 38	-
Carlisle,	30	6	40 00	25 88	850 00	-	60 00	-	500 00	30 00	-
Charlestown,	483	10.10	168 50	55 49	90,075 53	-	-	2,500 00	5,600 00	336 00	-
Chelmsford,	96	6.17	45 00	28 34	3,000 00	-	153 88	125 00	-	-	-
Concord,	120.10	9.6	128 21	32 00	5,300 00	-	96 00	100 00	1,581 59	94 48	-
Dracut,	76.19	6.8	-	33 20	3,000 00	-	375 00	-	-	-	-
Dunstable,	32.10	6.10	-	24 93	800 00	\$12 00	42 75	-	-	-	-
Everett,	94.10	10.10	125 00	40 00	6,200 00	-	-	-	-	-	-
Frammingham,	171	8.11	137 50	45 00	12,400 00	-	321 00	-	4,259 00	255 54	-
Groton,	133.6	7.5	49 50	33 40	6,000 00	45 00	250 00	-	40,500 00	2,835 00	-
Holliston,	133.12	8.8	80 25	31 50	6,000 00	-	390 50	-	-	-	-
Hopkinton,	173.5	8.5	77 50	33 20	9,000 00	-	293 00	-	5,000 00	300 00	-
Hudson,	100.15	8.3	100 00	36 00	5,000 00	-	237 75	-	-	-	-

Lexington, .	97.3	9.14	\$110 00	\$33 08	\$7,000 00	-	\$281 00	-	\$1,209 21	\$148 18	-	-
Lincoln, .	41.5	8.5	-	40 00	1,700 00	-	42 00	-	-	-	-	-
Littleton, .	48.18	6.19	-	30 45	1,700 00	-	97 30	-	-	-	-	-
Lowell, .	641	10.10	163 37	46 80	87,865 17	2,000 00	2,636 60	-	-	-	-	-
Malden, .	264.10	10.5	135 41	40 74	19,000 00	-	895 00	-	-	-	-	-
Mariborough, .	258.15	8.17	129 07	41 73	16,000 00	-	590 75	-	2,400 00	144 00	-	-
Maynard, .	-	-	-	-	-	-	-	-	-	-	-	-
Medford, .	196.16	10.8	123 33	37 50	19,740 00	-	815 00	-	-	-	-	-
Melrose, .	130	10	180 00	42 77	8,200 00	-	290 00	-	-	-	-	-
Natick, .	201.8	8.7	102 12	38 10	11,900 00	-	578 95	-	-	-	-	-
Newton, .	499.4	9.12	193 54	65 54	54,000 00	-	1,605 00	-	-	-	-	-
No. Reading, .	46.10	7.15	-	28 50	1,400 00	-	91 00	-	-	-	-	-
Pepperell, .	60	6	40 00	28 47	1,545 00	-	95 00	-	-	-	-	-
Reading, .	127.10	9.2	167 00	37 00	7,000 00	\$300 00	200 00	-	-	-	-	-
Sherborn, .	62.5	7.3	100 00	30 63	2,000 00	-	158 00	-	5,000 00	300 00	-	-
Shirley, .	54.14	6	40 70	37 60	2,000 00	-	97 25	-	7,000 00	420 00	-	-
Somerville, .	516.10	10.10	162 50	49 72	46,450 00	-	250 00	1,650 00	-	-	-	-
Stoneham, .	149.15	9.8	57 50	39 25	8,750 00	-	350 00	-	-	-	-	-
Stow, .	56	8	-	33 66	2,000 00	-	140 00	100 00	-	-	-	-
Sudbury, .	73.18	8.4	40 00	35 68	2,800 00	-	198 00	-	1,000 00	60 00	-	-
Tewksbury, .	61.5	8.15	-	30 67	1,800 00	-	118 45	-	-	-	-	\$97 27
Townsend, .	72.6	6	50 33	32 45	3,000 00	-	170 00	-	-	-	-	-
Tyngsborough, .	38.10	4.16	65 00	24 00	1,050 00	-	87 00	-	1,111 11	154 00	-	-
Wakefield, .	128.17	10	140 00	37 84	7,500 00	-	324 00	-	-	-	-	-
Waltham, .	251.5	10.1	175 64	47 88	25,234 77	-	885 00	-	-	-	-	-
Watertown, .	120	9	125 00	41 75	14,000 00	-	250 00	-	-	-	-	-
Wayland, .	58.14	8.8	-	34 00	2,000 00	12 00	165 00	-	200 00	12 00	-	-
Westford, .	88	8	50 00	30 50	2,500 00	-	125 00	-	20,000 00	1,200 00	-	-
Weston, .	64.15	9.5	100 00	32 00	3,133 00	-	116 00	-	-	-	-	-
Wilmington, .	33.5	6.13	-	30 80	1,075 00	-	73 00	-	-	-	-	-
Winchester, .	98	9.7	148 75	42 94	9,000 00	-	315 00	-	-	-	-	-
Woburn, .	303.15	9	113 60	40 85	19,314 95	-	100 00	1,200 00	25,000 00	1,750 00	-	-
Total, .	8.19	-	\$106 88	\$36 46	\$687,318 69	\$369 00	\$16,071 47	10,935 00	156,714 91	\$10,503 40	\$376 08	-

MIDDLESEX COUNTY—CONCLUDED.

TOWNS.	HIGH SCHOOLS.				IN CORP. ACADEMIES.			UNINCORP. ACADEMIES AND PRIVATE SCHOOLS.			Town's share of School Fund, payable Jan. 25, 1871.	How appropriated.	
	Number.	How supported.	LENGTH.		Salary of Principal.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.			Aggregate paid for Tuition.
			Months.	Days.									
Acton,	-	-	-	-	-	-	-	-	-	-	\$185 54	Schools.	
Arlington,	1	Taxation,	10.5	-	\$1,900 00	-	-	-	-	-	269 70	"	
Ashby,	-	-	-	-	-	-	-	-	-	-	149 76	"	
Ashland,	1	Taxation,	9.16	-	1,000 00	-	-	-	-	-	198 12	"	
Ayer,	-	-	-	-	-	-	-	-	-	-	-	-	
Bedford,	-	-	-	-	-	-	-	-	1	15	\$250 00	Schools.	
Belmont,	1	Taxation,	10	-	1,245 00	-	-	-	2	20	2,000 00	"	
Billerica,	-	-	-	-	-	1	40	\$240 00	-	-	193 36	"	
Boxborough,	-	-	-	-	-	-	-	-	-	-	123 20	"	
Brighton,	1	Taxation,	10.5	-	1,700 00	-	-	-	-	-	324 47	"	
Burlington,	-	-	-	-	-	-	-	-	-	-	128 18	"	
Cambridge,	1	Taxation,	10	-	3,250 00	-	-	-	18	616	24,364 00	City Treas.	
Carlisle,	-	-	-	-	-	-	-	-	-	-	134 66	Schools.	
Charlestown,	1	Taxation,	10.10	-	2,500 00	-	-	-	3	60	8,100 00	"	
Chelmsford,	-	-	-	-	-	-	-	-	-	-	1,757 42	"	
Concord,	1	Taxation,	9.15	-	1,200 00	-	-	-	-	-	215 15	"	
Dracut,	-	-	-	-	-	-	-	-	-	-	215 44	"	
Dunstable,	-	-	-	-	-	-	-	-	4	75	201 47	"	
Everett,	-	-	-	-	-	-	-	-	-	-	121 80	"	
Framingham,	2	Taxation,	10	-	{ 1,200 00 } 1,550 00 }	-	-	-	-	-	-	-	
Groton,	1	Taxation,	10	-	500 00	1	-	-	-	-	810 77	Schools.	
Holliston,	1	Taxation,	10	-	1,100 00	-	-	-	1	20	60 00	"	
Hopkinton,	1	Taxation,	8.5	-	1,000 00	-	-	-	-	-	281 69	"	
Hudson,	1	Taxation,	10	-	1,000 00	-	-	-	-	-	350 14	"	
									1	40	425 00	"	

NANTUCKET COUNTY.

TOWNS.	Population—U. S. Census, 1870.	Valuation—1865.	No. of Schools.	Amount expended in 1870 for Erecting School-Houses.	Amount paid for Renting, etc., in 1870.	No. of different Schools in Public Schools during the School-year.	Average attendance in all the Public Sch'ls during the School-year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State between 5 and 15 years of age, May 1, 1870.	Number of different persons employed as Teachers in Public Sch'ls.	
											Males.	Fem.
Nantucket, .	4,123	\$2,152,568	10	-	-	769	503	-	80	655	4	21

NORFOLK COUNTY.

Bellingham, .	1,282	\$463,951	8	-	\$800 00	275	175	13	41	216	2	10
Braintree, .	3,948	1,582,530	17	\$8,790 13	516 81	786	555	16	29	881	1	22
Brookline, .	6,650	12,107,550	20	-	3,500 00	975	878	5	128	1,103	5	26
Canton, .	3,879	2,211,313	16	-	1,927 96	992	599	8	11	935	4	18
Cohasset, .	2,130	1,174,953	10	-	214 72	423	306	3	46	456	3	9
Dedham, .	7,842	4,857,587	30	-	2,156 00	1,428	1,077	6	115	1,419	7	33
Dover, .	645	358,774	4	1,876 53	21 00	185	85	6	26	133	-	6
Foxborough, .	3,057	1,284,524	10	-	347 72	603	385	17	74	543	3	13
Franklin, .	2,512	1,046,874	13	1,529 00	225 00	559	406	15	25	507	1	24
Hyde Park, .	4,136	* 24,000 00	20	24,000 00	-	947	746	-	20	950	4	19
Medfield, .	1,142	618,135	4	-	253 40	218	144	-	23	221	2	3
Medway, .	3,721	1,251,398	15	-	-	738	550	3	76	600	4	18
Milton, .	2,683	4,271,268	11	7,000 00	196 12	495	438	1	46	466	6	11
Needham, .	3,607	1,798,498	17	17,662 59	849 63	818	538	7	49	689	3	20
Norfolk, .	1,081	* 8,883,608	6	-	123 62	204	132	6	21	222	1	10
Quincy, .	7,442	2,925,254	24	-	1,306 71	1,521	1,120	-	27	1,536	8	35
Randolph, .	5,642		23	-	1,200 00	1,170	792	25	40	1,386	6	31

Sharon, . . .	1,508	\$723,752	6	-	\$218 55	286	180	8	12	297	1	9
Stoughton, . .	4,914	1,742,453	19	-	960 00	1,105	878	3	70	1,128	2	21
Walpole, . . .	2,187	1,132,102	10	-	-	340	294	-	37	395	8	13
West Roxbury, .	8,683	10,631,146	81	\$19,589 81	8,768 18	1,599	1,306	-	139	1,630	6	85
Weymouth, . .	9,010	8,345,849	37	14,856 09	8,616 28	2,002	1,498	21	107	1,903	7	81
Wrentham, . .	2,292	1,412,051	12	-	50 00	469	292	5	31	429	1	13
Total, . . .	89,443	\$58,767,980	363	\$95,303 65	\$21,756 70	18,038	13,374	163	1,193	18,045	80	430

* Included in towns of which they were a part before incorporated.

NANTUCKET COUNTY—CONTINUED.

TOWNS.	Aggregate Length of the year, in Months	Average Length as returned by Committee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including board, fuel, care of fires and school-rooms, for the school-year 1870-71.	Amount of board, fuel, etc., voluntarily contributed for Public Schools.	Expenses of Superintendence by School Committee and printing School Reports.	Salary of Superintendent of Public Schools.	Amt of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Fund.	Income of Funds, appropriated to Public Schools at the option of the Town, including Tax on dogs.
			Males.	Females.							
Nantucket, .	10.6	-	\$74 42	\$23 12	\$8,000 00	-	\$100 00	-	\$40,000 00	\$2,000 00	-

NORFOLK COUNTY—CONTINUED.

Bellingham, .	60	7.10	\$42 50	\$33 95	\$2,000 00	-	\$108 10	-	\$418 16	\$25 09	\$140 68
Braintree, .	143.9	8.17	118 27	33 27	6,000 00	-	150 00	-	4,500 00	400 00	-
Brookline, .	190	10	190 00	63 70	28,490 04	-	550 00	-	-	-	-
Canton, .	158.8	9.18	82 50	29 54	8,000 00	-	202 00	\$150 00	-	-	-
Cohasset, .	100	10	68 50	27 88	4,000 00	\$235 00	178 25	-	1,000 00	60 00	-
Dedham, .	304	10.2	115 00	44 00	19,217 50	-	560 00	-	1,100 00	66 00	-
Dover, .	27.13	6.18	-	30 67	900 00	-	42 00	-	-	-	77 10
Foxborough, .	88.10	8.10	67 77	36 00	4,500 00	-	245 00	-	-	-	188 85
Franklin, .	98.15	7.12	75 00	40 79	4,000 00	55 00	279 00	-	-	-	-
Hyde Park, .	192.5	10.4	132 50	47 18	15,000 00	-	706 00	-	-	-	-
Medfield, .	28.10	5.18	90 00	27 00	1,200 00	-	75 00	-	8,750 00	225 00	-
Medway, .	117.10	7.17	64 52	36 00	5,500 00	-	306 85	-	-	-	-
Milton, .	102	9.5	118 15	40 41	10,000 00	-	295 00	-	-	-	-
Needham, .	157.19	9.10	110 00	38 58	10,000 00	-	512 10	-	-	-	-
Norfolk, .	45	7.10	86 00	32 00	2,000 00	-	108 00	-	-	-	-
Quincy, .	258	10.15	96 18	31 95	17,570 00	-	820 00	-	1,250 00	75 00	-
Randolph, .	219.10	9.15	86 00	28 04	10,000 00	-	244 50	-	27,000 00	1,771 85	-

Sharon, .	54	9	\$48 00	\$33 09	\$1,500 00	\$120 00	\$105 00	-	\$1,860 00	\$140 95	\$270 17
Stoughton, .	170.2	8.19	99 82	33 95	8,000 00	\$120 00	282 50	-	-	-	-
Walpole, .	90.5	8	75 33	38 67	4,500 00	-	125 00	-	-	-	-
West Roxbury, .	310	10	180 00	59 19	30,000 00	-	1,150 00	-	58,000 00	4,000 00	-
Weymouth, .	358	9.14	86 00	32 50	20,000 00	300 00	840 50	-	4,200 00	252 00	-
Wrentham, .	98.10	7.14	122 22	31 79	4,000 00	-	275 00	-	2,001 96	120 10	223 22
Total, .	9.5.	-	\$95 65	\$36 96	\$216,377 54	\$710 00	\$8,159 30	\$150 00	105,080 12	\$7,135 49	\$894 97

NANTUCKET COUNTY—CONCLUDED.

TOWNS.	HIGH SCHOOLS.				IN CORP. ACADEMIES.			UNINCOR. ACADEMIES AND PRIVATE SCHOOLS.			Town's share of School Fund, payable Janu- ary 26, 1871.	How appropriated.	
	Number.	How supported.	Length.		Salary of Prin- cipal.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.			Aggregate paid for Tuition.
			Months.	Days.									
Nantucket, .	1	Taxation,	10.15		\$1,000 00	1	80	\$350 00	2	60	\$500 00	\$261 56	- Schools.

NORFOLK COUNTY—CONCLUDED.

	Number.	How supported.	Months.	Days.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Town's share of School Fund, payable January 26, 1871.	How appropriated.
Bellingham, .	1	Taxation,	9.5		1	122	\$5,329 30	1	80	\$400 00	\$163 17	Schools.
Braintree, .	1	Taxation,	10		1			1	80	7,000 00	328 91	"
Brookline, .	1	Taxation,	9.17		1			1	15	300 00	402 46	Treasury.
Canton, .	1	Taxation,	10		1			1	7	200 00	348 28	Schools.
Cohasset, .	1	Taxation,	10.2		1			4	70	2,000 00	226 34	"
Dedham, .	1	Taxation,	9		1			2	50	1,300 00	510 64	"
Dover, .	1	Taxation,	9.10		1			2	18	360 00	185 78	"
Foxborough, .	1	Taxation,	10.10		1			2	18	360 00	259 88	"
Franklin, .	1	Taxation,	10		1			2	18	360 00	252 62	"
Hyde Park, .	1	Taxation,	9		1			2	18	360 00	314 67	"
Medfield, .	1	Taxation,	9.5		1			2	18	360 00	159 25	"
Medway, .	1	Taxation,	9.10		1			2	18	360 00	292 81	"
Milton, .	1	Taxation,	7.5		1			2	18	360 00	222 42	"
Needham, .	2	Tax'n, {	9.10		2			2	18	360 00	288 67	"
Norfolk, .	1	Taxation,	10.15		1			2	18	360 00	580 77	"
Quincy, .	1	Taxation,	10		1			2	18	360 00	487 45	"
Randolph, .	1	Taxation,	10		1			2	18	360 00	487 45	"

Sharon, .	1	-	-	-	-	-	-	-	1	40	\$850 00	\$176 86	Schools.
Stoughton, .	1	Taxation,	-	9	-	-	-	-	-	-	-	420 91	"
Walpole, .	1	Taxation,	9.15	9.15	-	-	-	-	-	-	-	209 00	"
West Roxbury, .	1	In part Tax,	10	10	-	-	-	-	4	91	7,000 00	495 80	"
Weymouth, .	2	Tax'n, {	9.15	9.15	-	-	-	-	-	-	-	629 45	"
Wrentham, .	1	Taxation,	10	10	-	-	-	-	-	-	-	258 49	"
			9	9	1	-	-	-	-	-	-		
Total, .	21	-	-	-	2	122	\$5,329 80	441	\$25,410 00	\$7,109 08			

* Average.

PLYMOUTH COUNTY.

T O W N S.	Population—U. S. Census, 1870.	Valuation—1885.	No. of Schools.	Amount expended in 1870 for Erecting School-Houses.	Amount paid for Repairing, &c., in 1870.	No. of different Schools are in Public Schools during the School-year.	Average attendance in all the Public Sch'ls during the School-year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State between 5 and 15 years of age, May 1, 1870.	Number of different persons employed as Teachers in Public Sch'ls.	
											Males.	Fem.
Abington, .	9,308	\$3,059,801	40	\$19,480 77	\$2,000 00	1,897	1,596	79	101	2,135	10	49
Bridgewater, .	3,660	1,992,756	18	7,266 76	1,106 68	791	538	19	54	676	8	24
Carver, .	1,092	459,583	7	-	-	205	156	7	30	194	3	11
Duxbury, .	2,341	1,006,782	10	-	843 03	448	298	19	46	417	2	13
E. Bridgewater, .	3,017	1,136,937	13	-	871 97	589	487	9	77	579	1	18
Halifax, .	619	854,039	5	-	286 00	117	85	-	6	118	-	7
Hanover, .	1,628	747,591	9	-	175 00	334	248	8	26	322	2	11
Hanson, .	1,219	458,168	7	-	127 05	197	149	11	9	208	2	13
Hingham, .	4,422	2,391,437	13	-	562 80	740	480	4	10	784	5	12
Hull, .	261	150,864	1	-	60 00	37	27	4	1	41	1	1
Kingston, .	1,604	1,334,298	8	-	693 56	337	262	3	39	289	2	12
Lakeville, .	1,159	571,124	11	450 00	100 00	224	168	6	14	205	-	14
Marion, .	896	459,009	6	-	25 00	221	159	5	42	192	-	7
Marshfield, .	1,659	853,777	10	-	67 10	883	252	6	50	295	-	18
Mattapoisett, .	1,361	540,118	7	551 00	819 00	286	226	3	42	276	1	11
Middleborough, .	4,687	2,132,878	25	1,700 00	1,500 00	879	681	15	74	990	6	30
N. Bridgewater, .	8,007	2,209,839	29	18,504 39	1,817 95	1,449	1,121	17	73	1,589	4	35
Pembroke, .	1,447	675,993	8	-	120 00	268	199	10	25	276	-	13
Plymouth, .	6,239	3,145,119	29	-	1,000 00	1,156	934	18	112	1,142	9	34
Plympton, .	803	804,305	6	-	44 61	167	125	2	27	170	-	6
Rochester, .	1,024	547,181	6	-	28 57	187	108	5	31	188	-	8
Scituate, .	2,350	852,105	11	-	346 70	450	344	14	22	467	2	14
South Scituate, .	1,661	340,924	7	-	293 25	264	203	8	24	291	2	11

Wareham, .	3,098	\$882,580	14	-	\$400 00	701	531	13	71	625	5	16
W. Bridgewater, .	1,803	945,350	9	-	214 85	429	288	14	45	877	5	12
Total, .	65,865	\$27,932,058	309	\$47,952 92	\$12,003 12	12,756	9,615	299	1,051	12,846	70	400

SUFFOLK COUNTY.

Boston, .	250,526	*\$414,633,171	868	\$535,413 00	\$98,457 00	35,933	33,303	-	2,165	46,301	97	805
Chelsea, .	18,547	7,706,745	†55	-	10,000 00	2,985	2,670	1	203	8,106	3	58
Revere, .	1,197	860,359	4	-	328 86	211	136	4	6	191	1	4
Winthrop, .	532	406,239	4	-	111 57	125	88	2	8	124	-	5
Total, .	270,802	\$423,606,514	431	\$535,413 00	\$108,897 43	39,254	36,197	7	2,377	49,722	101	872

* Includes the valuation of Dorchester and Roxbury.

† Returns of 1869-70; no returns made for 1870-71.

PLYMOUTH COUNTY—CONTINUED.

TOWNS.	Aggregate Length of Public Schools for the year, in Months and Days.	Average Length as returned by Com- mittee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including wages of Teachers of board, fuel, care of rooms, for the school- year 1870-71.	Amount of board, fuel, etc., voluntarily con- tributed for Public Schools.	Expenses of Superin- tendence by School Committees and print- ing School Reports.	Salary of Superintend- ent of Public Schools.	Amt of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Funds.	Income of Funds, ap- propriated to Public Schools at the option of the Town, includ- ing Tax on dogs.
			Males.	Females.							
Abington, .	338.11	8.13	\$79 28	\$29 32	\$14,000 00	-	\$785 00	-	-	-	-
Bridgewater,	156.17	8.15	82 90	33 07	7,800 00	-	324 15	-	\$228 00	-	-
Carver, .	48.18	6.6	33 67	31 73	1,100 00	-	108 64	-	-	-	-
Duxbury, .	79.10	7.19	92 31	28 91	2,000 00	-	164 50	-	1,600 00	-	-
E. Bridgewater,	115	8.17	110 00	29 50	5,000 00	\$1,140 00	226 66	-	-	-	-
Halifax, .	38.15	6.15	-	26 00	1,000 00	-	96 00	-	-	-	-
Hanover, .	81	9	56 66	20 92	2,700 00	-	127 00	-	182 00	-	-
Hanson, .	53.15	7.14	40 00	26 67	1,500 00	-	120 00	-	-	-	-
Hingham, .	182.6	10.15	72 07	37 00	6,485 34	-	400 00	-	2,200 00	-	-
Hull, .	9	9	50 00	32 00	350 00	-	22 00	-	-	-	-
Kingston, .	74.3	9.5	70 00	31 43	3,000 00	-	35 00	\$200 00	-	-	\$74 50
Lakeville, .	66	6	-	24 00	1,688 30	-	75 00	-	-	-	-
Marion, .	37.10	6.5	-	28 33	1,000 00	-	62 00	50 00	-	-	-
Marshfield, .	79.16	8.10	-	29 20	2,300 00	-	99 93	-	-	-	-
Mattapoisett,	42	6	35 00	28 00	1,200 00	-	58 00	-	-	-	-
Middleborough,	205.13	8.4	57 20	27 50	7,000 00	-	300 00	-	598 00	-	-
N. Bridgewater,	239.10	8.10	88 60	42 00	14,250 00	-	315 81	-	1,600 00	-	-
Pembroke, .	68	8.10	-	27 50	1,800 00	-	141 00	-	17 19	-	-
Plymouth, .	273.10	9.0	94 66	33 36	14,500 00	-	40 00	1,150 00	-	-	-
Plympton, .	88.12	6.9	-	28 33	900 00	-	62 00	-	-	-	-
Rochester, .	44.7	7.7	-	29 72	1,200 00	-	102 67	-	-	-	-
Scituate, .	104.5	9.10	71 88	21 53	2,900 00	-	25 00	100 00	-	-	-
South Scituate,	66.15	9.11	33 00	31 43	2,000 00	-	120 00	-	-	-	-

Wareham, .	93.15	6.14	\$80 00	\$28 96	\$4,000 00	-	\$155 00	-	-	-
W. Bridgewater, .	72	8	61 67	32 50	3,000 00	-	119 00	\$89 00	\$80,000 00	\$5,280 00
Total, .	8.5	-	\$67 15	\$29 66	\$102,673 64	\$1,140 00	\$4,084 86	\$1,589 00	\$172,738 50	\$11,655 19
										\$74 50

SUFFOLK COUNTY—CONTINUED.

Boston, .	3,984	10 16	\$247 59	\$67 92	\$906,000 00	-	\$3,147 70	\$4,250 00	\$7,100 00	\$499 32	-
Chelsea, .	577.10	10.10	175 00	45 00	42,605 00	-	1,350 00	-	-	-	-
Revere, .	42	10.10	95 23	41 66	2,700 00	-	65 00	-	-	-	-
Winthrop, .	32 15	8 3	-	85 00	1,400 00	-	37 00	-	-	-	-
Total, .	10.14	-	\$172 61	\$47 65	\$952,705 00	-	\$4,599 70	\$4,250 00	\$7,100 00	\$499 32	-

PLYMOUTH COUNTY—CONCLUDED.

TOWNS.	HIGH SCHOOLS.				INCORP. ACADEMIES.			UNINCOR. ACADEMIES AND PRIVATE SCHOOLS.			Town's share of School Fund, payable Jan. 25, 1871.	How appropriated.	
	Number.	How supported.	LENGTH		Salary of Principal.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.			Aggregate paid for Tuition.
			Months	Days									
Abington, .	4	Taxation,	10*		\$1,000 00†	1	62	-	1	-	-	\$668 00	Schools.
Bridgewater, .	1	Taxation,	9		1,500 00	1		\$1,900 00	1	14	\$302 00	274 71	"
Carver, .	1	-	-		-	1		-	1	-	-	155 35	"
Duxbury, .	1	In part Tax,	9.15		1,000 00	1		-	1	30	270 00	211 54	"
E. Bridgewater, .	1	Taxation,	10		1,100 00	-		-	-	-	-	266 88	"
Halifax, .	1	-	-		-	-		-	-	-	-	130 75	"
Hanover, .	1	Taxation,	9		750 00	1	30	750 00	-	-	-	184 98	"
Hanson, .	-	-	-		-	-		-	-	-	-	165 40	"
Hingham, .	-	-	-		-	1	56	224 00	1	20	300 00	-	"
Hull, .	-	-	-		-	-		-	-	-	-	111 74	"
Kingston, .	1	Taxation,	9.10		900 00	-		-	1	14	1,000 00	188 34	"
Lakeville, .	-	-	-		-	-		-	-	-	-	157 58	"
Marion, .	-	-	-		-	-		-	2	50	55 00	151 99	"
Marshfield, .	-	-	-		-	-		-	-	-	-	186 38	"
Mattapoisett, .	-	-	-		-	-		-	-	-	-	177 44	"
Middleborough, .	1	Taxation,	10		1,200 00	1	25	200 00	2	50	1,000 00	361 63	"
N. Bridgewater, .	1	Taxation,	10		1,500 00	-		-	1	85	462 00	504 20	"
Pembroke, .	1	-	-		-	-		-	2	88	312 00	179 88	"
Plymouth, .	1	Taxation,	10		1,500 00	-		-	4	80	1,200 00	397 48	"
Plympton, .	-	-	-		-	-		-	-	-	-	144 73	"
Rochester, .	-	-	-		-	-		-	-	-	-	150 87	"
Scituate, .	1	Taxation,	9.10		800 00	-		-	-	-	-	221 87	"
South Scituate, .	-	-	-		-	-		-	-	-	-	184 14	"

Wareham, .	1	Taxation,	10	\$1,050 00	-	-	-	4	110	\$180 00	\$271 91	Schools.
W. Bridgewater, .	-	-	-	-	-	-	-	-	-	-	208 19	"
Total, .	14	-	-	-	5	178	\$8,074 00	19	441	\$5,081 00	\$5,655 42	

SUFFOLK COUNTY—CONCLUDED.

Boston, .	5	Taxation,	10.9	\$4,000 00	-	-	-	78	2,079	\$219,631 00	\$12,708 28†	Schools.
Chelsea, .	1	Taxation,	10.10	2,500 00	-	-	-	3	75	3,600 00	871 45	"
Revere, .	-	-	-	-	-	-	-	-	-	-	153 95	"
Winthrop, .	-	-	-	-	-	-	-	-	-	-	132 15	"
Total, .	6	-	-	-	-	-	-	81	2,154	\$223,231 00	\$13,860 83	

* Months each.

† Each.

† Including Dorchester.

WORCESTER COUNTY.

TOWNS.	Population—U. S. Census, 1870.	Valuation—1880.	No. of Schools.	Amount expended in 1870 for erecting School-Houses.	Amount paid for Re- pairing, &c., in 1870.	No. of different Schools in Public Schools during the School-year.	Average attendance in all the Public Schools during the School-year.	Persons under 6 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State between 5 and 15 years of age, May 1, 1870.	Number of different persons employed as Teachers in Public Schools.	
											Males.	Fem.
Ashburnham,	2,172	\$789,081	11	-	\$100 00	382	356	5	60	400	4	19
Athol, .	3,517	1,085,516	16	-	1,900 00	585	468	8	75	579	8	22
Auburn, .	1,178	503,928	6	-	30 43	212	167	2	38	228	-	10
Barre, .	2,572	1,797,762	15	\$1,800 00	250 00	462	375	6	65	400	3	18
Berlin, .	1,016	401,881	5	-	-	235	183	2	48	311	2	8
Blackstone, .	5,421	1,993,024	18	8,322 53	802 74	1,354	799	5	56	1,042	4	18
			8	-	72 36	216	165	8	48	176	1	10
			5	-	22 83	210	113	9	38	154	-	10
			13	-	-	411	351	6	61	400	2	17
			13	-	76 00	400	313	31	90	301	8	8
			15	-	1,185 38	1,118	742	-	57	1,069	1	18
			6	-	15 00	145	118	7	27	151	2	9
			18	-	71 07	417	311	16	57	415	5	18
			12	-	500 00	400	326	20	31	598	5	19
			37	19,058 13	3,609 62	2,231	1,589	25	220	2,105	7	47
			14	596 09	-	662	532	17	155	648	2	18
			18	6,439 83	102 84	850	633	26	88	946	1	30
			12	-	829 88	400	297	23	83	400	5	14
			10	-	-	308	286	5	70	280	6	18
			18	-	150 00	400	309	14	84	400	2	16
			18	-	700 00	376	257	6	87	400	6	17
			12	-	180 74	816	288	8	40	400	1	15
			11	-	490 00	475	361	4	80	460	2	14
			18	-	1,154 10	621	541	10	88	607	3	18
			9	2,250 00	100 00	254	197	6	48	400	2	10

Mendon,	1,175	888,709	8	-	864 00	236	185	18	55	241	1	13
Milford,	9,890	8,275,231	27	\$19,687 53	1,614 93	2,250	1,706	-	15	2,396	3	41
Millbury,	4,397	1,392,456	17	1,500 00	203 15	655	577	4	57	970	3	25
New Braintree,	640	553,719	6	-	60 00	157	99	2	19	133	1	7
Northborough,	1,504	1,034,978	7	6,182 00	75 00	304	199	-	45	283	1	8
Northbridge,	3,774	898,385	14	7,500 00	373 00	773	544	5	40	802	1	21
No Brookfield,	3,343	1,104,648	13	-	170 00	742	456	20	75	786	-	25
Oakham,	860	318,003	7	-	111 00	190	148	2	39	154	3	10
Oxford,	2,669	1,137,476	14	-	76 26	533	395	14	106	548	1	18
Paxton,	646	297,237	6	-	440 00	165	119	3	19	120	-	7
Petersham,	1,335	651,779	11	-	161 00	290	192	6	40	238	5	14
Phillipston,	693	320,834	8	-	25 00	184	144	3	38	159	2	7
Princeton,	1,279	778,666	10	-	10 00	306	204	7	49	237	3	10
Royalston,	1,354	711,872	12	-	-	308	214	9	56	243	3	18
Rutland,	1,024	523,646	8	-	75 00	270	180	4	59	240	1	12
Shrewsbury,	1,610	1,026,968	9	-	100 00	288	246	2	46	285	3	12
Southborough,	2,135	957,409	10	-	668 44	534	314	7	48	464	3	14
Southbridge,	5,208	1,696,264	19	-	-	1,236	649	33	131	1,161	1	29
Spencer,	3,952	1,363,465	17	3,071 37	213 40	900	589	2	20	809	1	23
Sterling,	1,670	1,086,710	12	1,500 00	-	383	291	13	72	298	6	13
Sturbridge,	2,101	864,875	15	570 00	25 00	355	268	10	46	314	1	22
Sutton,	2,699	1,141,588	15	-	132 00	504	379	13	48	534	8	18
Templeton,	2,802	979,116	15	-	682 99	541	449	13	92	492	5	12
Upton,	1,989	736,082	11	-	266 90	381	336	9	19	354	1	10
Uxbridge,	3,058	1,624,174	17	400 00	2,560 66	546	437	13	68	648	5	19
Warren,	2,625	985,109	13	-	900 00	520	348	8	48	490	2	17
Webster,	4,763	1,060,039	11	18,500 00	250 00	783	484	6	9	896	2	16
Westborough,	3,601	860,922	16	-	-	595	471	-	51	681	1	22
West Boylston,	2,862	679,389	11	9,219 88	450 15	519	421	6	58	550	-	14
West Brookfield,	1,842	1,337,740	9	1,246 00	300 00	392	263	4	54	371	3	16
Westminster,	1,770	721,267	11	-	-	382	293	6	92	288	5	11
Winchendon,	3,398	1,160,952	16	4,327 22	411 99	584	368	11	72	620	1	20
Worcester,	41,107	19,701,244	128	138,997 09	2,774 83	9,420	5,732	-	285	7,519	10	171
Total,	192,718	\$80,857,766	846	\$246,117 17	\$24,580 79	39,931	27,672	512	3,655	37,116	165	1,110

WORCESTER COUNTY—CONTINUED.

TOWNS.	Aggregate Length of the year, in Months and Days.	Average Length as returned by Committee.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including wages of Teachers, fuel, care of Board, fuel, care of fires and school-houses for the school-year 1878-79.	Amount of Board, fuel, &c., voluntarily contributed for Public Schools.	Expenses of Superintendence by School Committee and printing School Reports.	Salary of Superintendent of Public Schools.	Part of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Funds.	Income of Funds, appropriated to Public Schools at the option of the Town, including Tax on dogs.
			Males.	Females.							
Ashburnham,	68.17	6.5	\$66 67	\$31 84	\$3,000 00	-	\$140 00	-	-	-	-
Atol.,	121.10	7.12	58 44	80 50	4,566 00	-	498 00	\$450 00	-	-	-
Auburn,	102.15	6.2	-	82 00	1,200 00	-	75 00	-	-	-	-
Barre, .	83.15	6.17	70 00	83 25	4,050 00	-	268 00	-	\$120 00	-	\$243 00
Berlin,	147	6.15	44 00	28 92	1,000 00	-	84 75	-	-	-	-
Blackstone,	59.15	6.10	76 53	81 77	6,500 00	\$10 00	199 85	-	12,000 00	900 00	-
Bolton,	84	7.10	80 00	24 86	1,200 00	-	112 00	-	-	-	-
Boylston,	95.11	6.16	-	83 00	1,200 00	-	125 00	-	-	-	-
Brookfield,	97.10	7.11	49 00	82 34	3,900 00	-	175 00	-	2,000 00	146 00	-
Brookfield,	142.10	7.10	41 88	29 78	3,000 00	-	168 00	-	-	-	-
Brookfield,	142.10	9.8	155 84	39 14	8,861 39	-	218 86	-	-	-	-
Brookfield,	142.10	6.2	28 00	27 64	1,000 00	-	95 91	-	-	-	-
Brookfield,	86.14	6.14	54 40	29 26	8,500 00	-	91 03	75 00	941 29	56 48	-
Brookfield,	100	8.7	86 00	81 50	4,200 00	-	195 00	-	6,000 00	420 00	-
Brookfield,	208.10	8	125 00	34 00	21,000 00	-	979 85	-	-	-	-
Brookfield,	153	6	97 50	82 80	3,800 00	-	219 00	-	1,000 00	60 00	-
Brookfield,	81.15	8.10	120 00	33 75	6,800 00	-	839 79	-	1,000 00	67 87	-
Brookfield,	80.5	6.16	47 40	81 70	3,000 00	-	200 00	-	200 00	12 00	95 68
Brookfield,	78.10	6	47 16	34 67	2,400 00	-	180 00	-	-	-	-
Brookfield,	74.5	6.4	45 00	80 41	2,700 00	-	280 00	200 00	3,386 67	202 00	-
Brookfield,	85	6.19	58 15	82 02	2,500 00	7 00	280 00	-	1,200 00	72 00	-
Brookfield,	92.5	7.3	40 00	30 00	4,200 00	-	162 99	-	1,000 00	60 00	-
Brookfield,	181.6	8.10	77 62	36 36	4,725 00	95 00	275 00	-	20,300 00	1,500 00	-
Brookfield,	53.14	7.8	93 33	87 30	6,000 00	-	259 00	-	11,433 33	704 09	175 00
Brookfield,		6.19	54 14	64 17	2,176 00	-	338 00	-	-	-	-

Mendon,	51.15	6.9	\$75 00	\$29 27	\$1,650 00	-	\$80 20	\$50 00	-	\$864 00	\$44 00	-	-
Milford,	240.10	8.18	119 44	39 28	16,000 00	-	593 57	-	-	-	-	-	-
Millbury,	144.5	8.8	69 00	32 00	6,000 00	-	215 00	-	-	-	-	-	-
New Braintree,	86	6	50 00	34 00	1,571 00	-	80 00	-	-	-	-	-	-
Northborough,	56.15	8.2	95 00	32 75	3,000 00	-	79 50	-	-	-	-	-	\$196 00
Northbridge,	120 15	8.12	100 00	36 94	5,200 00	-	125 00	-	-	-	-	-	-
No. Brookfield,	99.4	7.13	-	43 90	5,000 00	-	234 00	-	-	-	-	-	-
Oakham,	42	6	37 34	28 00	1,300 00	-	91 50	-	-	-	-	-	-
Oxford,	109	7.15	60 00	34 45	4,500 00	-	217 03	-	-	-	-	-	-
Paxton,	33	6	-	29 64	800 00	-	78 00	-	-	-	-	-	-
Petersham,	66	6	26 00	24 78	1,800 00	-	141 00	-	\$864 00	\$44 00	-	-	-
Phillipston,	34	4.10	46 00	23 00	1,000 00	-	42 00	-	-	-	-	-	-
Princeton,	57	6	58 67	27 46	1,700 00	-	135 25	-	-	-	-	-	71 00
Royalston,	36	6	47 00	23 86	1,500 00	-	149 65	-	11,500 00	525 66	-	-	-
Rutland,	48	6	32 00	29 21	1,608 96	-	124 80	-	-	-	-	-	-
Shrewsbury,	65.5	7.5	58 00	32 12	2,600 00	-	140 50	-	-	-	-	-	-
Southborough,	89 11	8.19	97 50	34 88	4,500 00	-	187 00	-	-	-	-	-	-
Southbridge,	149 2	7.17	130 89	31 12	7,400 00	-	325 00	-	-	-	-	-	-
Spencer,	124 5	7.7	100 00	31 50	5,000 00	-	278 00	-	-	-	-	-	-
Sterling,	72	6	46 67	31 38	2,000 00	-	176 60	-	-	-	-	-	-
Sturbridge,	88 10	5.18	48 00	25 60	2,200 00	-	135 00	-	-	-	-	-	-
Sutton,	98 6	6.12	44 00	31 74	3,500 00	-	130 00	-	2,040 00	122 00	-	-	-
Templeton,	93	6.4	54 04	33 39	3,800 00	-	222 59	-	-	-	-	-	-
Upton,	68.5	6.4	80 00	30 75	2,772 70	-	106 70	-	-	-	-	-	-
Uxbridge,	130 19	7.14	64 22	31 08	5,000 00	-	158 11	-	-	-	-	-	220 00
Warren,	127	8.8	80 00	34 12	4,500 00	\$72 00	201 00	-	-	-	-	-	-
Webster,	95.4	8.15	120 00	35 42	4,800 00	-	300 00	-	-	-	-	-	-
Westborough,	114.3	7.12	100 00	40 00	5,835 00	-	300 00	-	-	-	-	-	-
West Boylston,	78	7	-	32 31	3,000 00	60 00	143 00	-	-	-	-	-	-
West-Brookfield,	65.12	7.6	55 33	33 13	2,500 00	-	125 50	-	-	-	-	-	-
Westminster,	63	6	48 00	34 45	2,800 00	-	120 00	-	-	-	-	-	-
Winchendon,	103	6.9	100 00	33 96	5,000 00	-	275 43	-	-	-	-	-	-
Worcester,	1,118	10.5	162 12	52 60	96,606 29	-	4,114 84	-	-	-	-	-	-
Total,	7.8	-	\$71 03	\$32 42	\$323,019 34	\$244 00	\$15,614 80	\$775 00	\$76,845 29	\$5,002 10	\$1,000 63	-	-

WORCESTER COUNTY—CONCLUDED.

	Taxation,	5 10	\$412 50	-	-	-	3	71	\$264 00	\$162 77	Schools.
Milford, .	Taxation,	10	1,500 00	-	-	-	1	21	500 00	784 11	"
Millbury, .	Taxation,	10	1,100 00	-	-	-	-	-	-	327 55	"
New Braintree, .	-	-	-	-	-	-	-	-	-	132 42	"
Northborough, .	Taxation,	10	950 00	-	-	-	-	-	-	186 65	"
Northbridge, .	Taxation,	10	1,000 00	-	-	-	-	-	-	321 12	"
No Brookfield, .	Taxation,	10	1,000 00	-	-	-	-	-	-	279 19	"
Oakham, .	-	-	-	-	-	-	1	32	140 00	140 53	"
Oxford, .	Tax'n, }	8.15 6.5	500 00 } 375 00 }	-	-	-	-	-	-	243 96	"
Paxton, .	-	-	-	-	-	-	-	-	-	181 59	"
Petersham, .	-	-	-	-	-	-	2	45	1,800 00	167 08	"
Phillipston, .	Taxation,	2 10	140 00	-	-	-	-	-	-	142 76	"
Princeton, .	In part Tax.,	2.10	240 00	-	-	-	-	-	-	162 89	"
Royalston, .	-	-	-	-	-	-	-	-	-	167 92	"
Rutland, .	-	-	-	-	-	-	1	32	140 00	153 67	"
Shrewsbury, .	Taxation,	7.10	576.14	-	-	-	-	-	-	184 41	"
Southborough, .	Taxation,	8.10	1,020 00	48	-	-	2	20	548 00	225 78	"
Southbridge, .	Taxation,	9.11	1,250 00	-	-	-	1	20	75 00	457 80	"
Spencer, .	Taxation,	10	1,000 00	-	-	-	-	-	-	304 06	"
Sterling, .	-	-	-	-	-	-	-	-	-	181 06	"
Sturbridge, .	-	-	-	-	-	-	1	36	35 00	188 04	"
Sutton, .	-	-	-	-	-	-	1	24	60 00	-	"
Templeton, .	Taxation,	9	1,000 00	-	-	-	-	-	-	235 57	"
Upton, .	Taxation,	8 5	675 00	-	-	-	1	-	80 00	201 75	"
Uxbridge, .	Taxation,	10	1,000 00	-	-	-	-	-	-	256 55	"
Warren, .	Taxation,	10	1,200 00	-	-	-	-	-	-	225 78	"
Webster, .	Taxation,	9 10	1,200 00	-	-	-	-	-	-	348 51	"
Westborough, .	Taxation,	10	1,200 00	-	-	-	-	-	-	260 33	"
West Boylston, .	-	-	-	-	-	-	-	-	-	258 52	"
West Brookfield, .	-	-	-	-	-	-	1	-	-	200 63	"
Westminster, .	-	-	-	-	-	-	-	-	-	185 82	"
Winchendon, .	Taxation,	9.10	1,200 00	-	-	-	-	-	-	257 66	"
Worcester, .	Taxation,	10.5	2,300 00	40	-	-	8	310	24,500 00	2,013 76	"
Total, .	-	-	-	5	210	40	1,071	\$29,704 25	\$15,356 41		

RECAPITULATION.

COUNTIES.	Population—U. S. Census, 1870.	Valuation—1865.	No. of Schools.	Amount expended in 1870 for Erecting School-Houses.	Amount paid for Re- pairing, &c., in 1870.	No. of different Schol- ars in Public Schools during the School- year.	Average attendance in all the Public Sch'ls during the School- year.	Persons under 5 years of age who attend the Public Schools.	Persons over 15 years of age who attend the Public Schools.	No. in the State be- tween 5 and 15 years of age, May 1, 1870.
Barnstable, .	32,774	\$14,276,198	177	\$14,238 88	\$6,545 63	7,345	5,566	68	1,411	6,669
Berkshire, .	64,826	27,937,444	331	38,331 41	10,857 45	12,692	8,588	347	1,088	13,085
Bristol, .	102,886	59,564,668	334	77,515 79	24,863 54	20,315	13,761	154	1,441	19,979
Dukes, .	3,787	2,183,975	21	200 00	862 65	788	617	5	115	762
Essex, .	200,843	90,398,467	578	159,463 80	39,109 70	35,174	25,694	150	2,374	38,639
Franklin, .	32,635	13,048,120	232	1,676 80	6,279 94	6,500	4,621	180	851	6,068
Hampden, .	78,409	33,253,177	335	57,578 40	10,586 18	13,719	9,466	252	1,107	18,787
Hampshire, .	44,388	20,510,994	267	64,334 85	8,567 60	9,557	6,483	174	1,096	8,665
Middlesex, .	274,353	155,814,723	842	373,947 24	71,868 66	56,828	39,593	403	4,184	52,211
Nantucket, .	4,128	2,152,568	10	—	—	769	503	—	80	655
Norfolk, .	89,448	95,079,794	363	95,303 65	21,756 70	18,038	13,374	163	1,193	18,045
Plymouth, .	65,365	27,932,058	309	47,952 92	12,003 12	12,756	9,615	299	1,051	12,846
Suffolk, .	270,802	878,276,700	481	535,413 00	108,897 43	39,254	36,197	7	2,377	49,722
Worcester, .	192,718	80,857,766	846	246,117 17	24,580 79	39,931	27,672	512	3,655	37,116
Total, .	1,457,862	\$1,009,709,652	5,076	\$1,712,073 91	\$346,779 39	278,661	201,750	2,714	21,973	278,249

RECAPITULATION—CONTINUED.

COUNTIES.	Number of different persons employed as Teachers in Public Schools.		Aggregate Length of the year, in Months and Days.	Average Wages of Teachers per month, including the Value of Board.		Raised by Taxes for Schools, including wages of Teachers, board, fuel, care of fires and school-rooms, for the school-year 1870-71.	Amount of board, fuel, &c., voluntarily contributed for Public Schools.	Expenses of Superintendence by School Committees and printing School Reports.	Salary of Superintendent of Public Schools.
	Males.	Females.		Males.	Females.				
Barnstable, .	64	177	7.8	\$62 57	\$27 46	\$53,950 00	\$305 00	\$2,081 99	\$450 00
Berkshire, .	79	440	7.10	45 35	26 99	95,118 24	2,879 06	8,297 75	150 00
Bristol, .	62	468	8.18	72 26	32 56	183,831 07	277 00	5,174 80	6,197 50
Dukes, .	11	20	6.9	50 06	21 97	4,875 00	-	864 55	-
Essex, .	117	793	9.2	92 75	34 07	368,347 53	865 80	15,128 15	7,530 00
Franklin, .	44	342	6.9	44 46	26 13	45,730 00	1,872 19	2,528 26	-
Hampden, .	45	455	8.6	62 42	29 05	155,184 28	1,281 21	3,204 43	3,500 00
Hampshire, .	47	373	7.16	52 55	28 92	80,205 00	2,597 00	2,651 40	3,500 00
Middlesex, .	159	1,285	8.19	106 88	86 46	687,318 69	369 00	16,071 47	10,935 00
Nantucket, .	4	21	10.6	74 42	23 12	8,000 00	-	100 00	-
Norfolk, .	80	480	9.5	95 65	36 96	216,877 54	710 00	8,159 80	150 00
Plymouth, .	70	400	8.5	67 15	29 66	102,673 64	1,140 00	4,084 86	1,589 00
Suffolk, .	101	872	10.14	172 61	47 65	952,705 00	-	4,599 70	4,250 00
Worcester, .	165	1,110	7.8	71 03	32 42	828,019 34	244 00	15,614 80	775 00
Total, .	1,049	7,186	8.09	\$76 44	\$31 67	\$3,272,335 88	\$12,540 26	\$83,060 96	\$89,026 50

RECAPITULATION—CONCLUDED.

COUNTIES.	Amt of School Funds, the income of which can be appropriated only for the support of Academies and Schools.	Income from Local School Fund.	Income of Funds, appropriated to Public Schools at the option of the Town, including Tax on dogs.	No. of High Schools.	IN CORP. ACADEMIES.			UNINCOR. ACADEMIES AND PRIVATE SCHOOLS.			Amount of the State School Fund rec'd in 1871.
					Number.	Average No. of Scholars.	Aggregate paid for Tuition.	Number.	Average No. of Scholars.	Aggregate paid for Tuition.	
Barnstable, .	\$30,900 00	\$2,292 80	\$25 22	7	2	5	\$60 00	6	180	\$2,275 00	\$2,466 68
Berkshire, .	22,031 65	1,361 23	458 84	10	2	65	2,800 00	24	265	12,300 00	6,622 43
Bristol, .	28,200 00	1,822 00	69 09	9	3	230	14,660 00	27	478	7,550 00	7,257 35
Dukes, .	—	—	—	1	1	80	800 00	7	136	594 00	805 00
Essex, .	215,427 00	13,084 41	1,349 40	20	6	505	20,729 78	73	3,748	32,615 60	14,073 20
Franklin, .	44,139 00	3,367 29	254 30	3	6	220	5,595 86	19	322	3,456 00	4,335 42
Hampden, .	132,687 26	7,075 17	1,095 69	10	2	396	14,488 71	28	1,132	12,795 00	5,828 69
Hampshire, .	135,309 54	10,010 08	641 96	9	3	448	9,981 50	19	150	3,299 00	4,697 09
Middlesex, .	156,714 91	10,503 40	876 08	33	8	411	20,207 00	61	1,865	47,622 00	18,977 46
Nantucket, .	40,000 00	2,000 00	—	1	1	80	350 00	2	60	500 00	261 56
Norfolk, .	106,080 12	7,135 49	894 97	21	2	122	5,329 30	22	441	25,410 00	7,109 08
Plymouth, .	172,738 50	11,655 19	74 50	14	5	173	3,074 00	19	441	5,081 00	5,655 42
Suffolk, .	7,100 00	499 32	—	6	—	—	—	81	2,154	228,231 00	18,860 83
Worcester, .	76,845 29	5,002 10	1,000 68	35	5	210	17,560 00	40	1,071	29,704 25	15,356 41
Total, .	\$1,167,173 27	\$75,808 48	\$6,240 68	179	46	2,945	\$115,136 15	428	12,448	\$406,432 85	\$107,806 62

EVENING SCHOOLS.

CITIES AND TOWNS.	No. of Schools.	ATTENDANCE.			Time Kept.	No. of Teachers.	Expense.
		Males.	Females.	Average Number.			
Boston, . . .	—	690	331	1,021	6 months.	71	\$20,000 00
Brighton, . . .	—	24	5	20	2 months.	2	125 00
Brookline, . . .	—	70	27	48	16 weeks.	4	331 00
Cambridge, . . .	—	167	110	135	4 months.	14	1,500 00
Canton, . . .	8	75	114	121	16 weeks.	3	299 04
Charlestown, . . .	—	184	99	113	3 months.	9	1,342 29
Chester, . . .	—	20	3	16	6 weeks.	1	—
Concord, . . .	—	6	10	12	3 mos. 1 w'k.	3	125 00
Dedham, . . .	2	164	91	122	{ 4 months. } { 3 " }	35	437 00
Fall River, . . .	3	226	83	170	74 evenings.	10	794 52
Fitchburg, . . .	—	41*	—	25	54 "	8	—
Lawrence, . . .	—	250	285	139	4 months.	12	800 00
Lowell, . . .	2	708	296	334	56 evenings.	33	2,203 76
Lynn, . . .	4	220	110	198	33 "	31	1,450 00
Medford, . . .	—	41	6	19	12 weeks.	2	421 33
New Bedford, . . .	—	45	25	40	6 months.	3	800 00
Newburyport, . . .	—	40	—	—	—	4	—
Newton, . . .	—	30	20	40	10 weeks.	3	100 00
Northampton, . . .	3	141	51	144	6 months.	7	900 00
N. Bridgewater, . . .	—	83	57	90	3 "	3	225 00
Quincy, . . .	—	211	13	130	12 weeks	8	600 26
Salem, . . .	—	143	48	62	82 even'gs.	5	811 56
Salisbury, . . .	—	40	—	—	3 months.	2	100 00
Springfield, . . .	2	110	75	77	80 evenings.	9	410 00
Taunton, . . .	—	105	47	99	2 weeks.	12	450 00
Ware, . . .	—	56	21	45	2 mos. 8 dys.	2	181 37
Watertown, . . .	—	40	30	60	3 months.	3	—
Westborough, . . .	—	28	23	—	10 weeks.	1	100 00
Westfield, . . .	—	35	17	26	28 evenings.	4	100 00
West Roxbury, . . .	—	71	48	35	5 months.	5	700 00
Woburn, . . .	—	83	16	15	91 evenings.	2	240 58
Worcester, . . .	3	275	278	128	5 months.	8	1,212 94

* Both males and females.

RETURNS OF SCHOOLS IN STATE INSTITUTIONS, FOR THE YEAR ENDING SEPTEMBER 30, 1870.

STATE INSTITUTIONS.	Number of Schools in the Institution.	Number of different Scholars of all ages during the year.	Average attendance during the year.	No. under 5 years of age attending School.	No. over 15 years of age attending School.	No. between 5 and 15 years of age remaining in the Institution, September 30, 1871.	No. of Teachers during the year.		Wages of Teachers per Month.		Length of each School in Months.
							Males.	Females.	Males.	Females.	
Monson State Almshouse,	6	567	309	28	8	292	1	15	\$50 00	\$21 00	12
Tewksbury State Almshouse,*	-	-	-	-	-	-	-	-	-	-	-
Lancaster State Industrial School,	5	195	140	-	90	50	-	5	-	20 84	12
Westborough Reform School,	8	472	298	-	54	211	2	6	{ 700 00† 500 00	{ †300 00 250 00 }	12
Nautical School Ship G. M. Barnard,	1	297	151	-	261	20	1	-	100 00	-	12

* School discontinued. † Per annum. ‡ Four teachers received \$300 per annum; 1 do \$250; and one \$96 for six months.

GRADUATED TABLES—FIRST SERIES.

The following Table shows the sums appropriated by the several cities and towns in the State, for the education of each child between 5 and 15 years of age. The income of the Surplus Revenue and of other funds held in a similar way, when appropriated to schools is added to the sum raised by taxes, and these sums constitute the amount reckoned as appropriations. The income of such School Funds as were given and are held on the express condition that their income shall be appropriated to schools, is not included. Such an appropriation of their income being necessary to retaining the funds, is no evidence of the liberality of those holding the trust. But if a town appropriates the income of any Fund to its Public Schools, which may be so appropriated or not, at the option of the voters, or when the town has a legal right to use such income in defraying its ordinary expenses, then such an appropriation is as really a contribution to Common Schools as an equal sum raised by taxes. On this account the Surplus Revenue, and sometimes other funds, are to be distinguished from Local School Funds as generally held. The income of the one *may* be appropriated to schools or not, at the pleasure of the town; the income of the other *must* be appropriated to schools by the condition of the donation. Funds of the latter kind are usually donations made to furnish means of education in addition to those provided by a reasonable taxation. Committees are expected, in their annual returns, to make this distinction in relation to School Funds.

Voluntary contributions are not included in the amount which is divided, in order to ascertain the sum appropriated to each child. In many towns such contributions, however liberal, are not permanent, and cannot be relied upon as a stated provision. They are often raised and applied to favor particular districts or schools, or classes of scholars, and not to benefit equally all that attend the Public Schools. Besides, the value of board and fuel gratuitously furnished is determined by the mere estimate of individuals, and is therefore uncertain; while the amount raised by taxes, being in money, has a fixed and definite value, and is a matter of record. Still, the contributions voluntarily made are exhibited in a separate column of the Table, as necessary to a complete statement of the provision made by the towns for the education of their children.

The Table exhibits the rank of each city or town in the State, in respect to its liberality in the appropriation of money to its schools, as compared with other cities and towns for the year 1870–71, also its rank in a similar scale for 1869–70. It presents the sum appropriated to each child between 5 and 15.

GRADUATED TABLES—FIRST SERIES.

[FOR THE STATE.]

*Table showing the comparative amount of Money appropriated by the different Towns in the State, for the education of each Child in the Town, between the ages of 5 and 15 years.**

For 1868-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
3	1	BROOKLINE, .	\$25 82 9	\$28,490 04	-	-	1,103	-
6	2	Newton, .	22 63 2	54,000 00	-	-	2,386	-
9	3	Belmont, .	22 52.7	6,150 00	-	-	273	-
4	4	Milton, .	21 45 9	10,000 00	-	-	466	-
15	5	Lexington, .	21 21.2	7,000 00	-	-	330	-
5	6	Brighton, .	20 30.7	17,200 00	-	-	847	-
8	7	Boston, .	19 56.8	906,000 00	-	-	46301	-
2	8	West Roxbury, .	18 40.5	30,000 00	-	-	1,630	-
21	9	Somerville, .	18 07.4	46,450 00	-	-	2,570	-
10	10	Nahant, .	17 89 5	1,700 00	-	-	95	-
12	11	Waltham, .	17 77.1	25,234 77	-	-	1,420	-
11	12	Medford, .	17 67.2	19,740 00	-	-	1,117	-
7	13	Arlington, .	16 97.4	11,457 59	-	-	675	-
17	14	Framingham, .	16 66 6	12,400 00	-	-	744	-
20	15	Springfield, .	16 00	67,714 22	-	-	4,232	-
19	16	Weston, .	15 98 5	3,133 00	-	-	196	-
14	17	Watertown, .	15 98.2	14,000 00	-	-	876	-
13	18	Swampscott, .	15 94.2	5,500 00	-	-	345	-
16	19	Hyde Park, .	15 78.9	15,000 00	-	-	950	-
29	20	Winchester, .	15 20.3	9,000 00	-	-	592	-
22	21	Charlestown, .	14 81 3	90,075 53	-	-	6,081	-
43	22	Westfield, .	14 58 9	16,500 00	-	-	1,131	-
30	23	Needham, .	14 51.4	10,000 00	-	-	669	-
-	24	Everett, .	14 35 2	6,200 00	-	-	432	-
27	25	New Bedford, .	14 28 1	53,938 31	-	-	3,777	-
28	26	Revere, .	14 12.6	2,700 00	-	-	191	-
200	27	W Springfield, .	13 92.1	6,000 00	-	-	431	-
111	28	Andover, .	13 92	9,576 42	-	-	688	-
85	29	Cambridge, .	13 72 1	110,951 98	-	-	8,086	-
24	30	Lowell, .	13 65	87,865 17	-	-	6,437	-

* Compare the rank of towns in this Table with their rank in the next or Second Series of Tables, showing the percentage of taxable property appropriated for Schools.

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
87	81	Dedham, .	\$18 54.8	\$19,217 50	-	-	1,419	-
25	32	Malden, .	13 40.8	19,000 00	-	-	1,417	-
46	33	Peabody, .	13 19.4	19,000 00	-	-	1,440	-
116	34	Lancaster, .	13 12.2	4,200 00	-	-	320	-
81	85	Worcester, .	12 84.8	96,606 29	-	-	7,519	-
53	36	Reading, .	12 79.7	7,000 00	-	-	547	\$300 00
18	37	Melrose, .	12 77.8	8,200 00	-	-	642	-
51	38	Plymouth, .	12 69.7	14,500 00	-	-	1,142	-
41	39	Concord, .	12 58.9	5,300 00	-	-	421	-
74	40	Northampton, .	12 39.3	24,080 00	-	-	1,943	-
52	41	Granby, .	12 26.1	1,925 00	-	-	157	-
40	42	Haverhill, .	12 24.4	26,000 00	\$521 18	26,521 18	2,166	-
39	43	Nantucket, .	12 21.4	8,000 00	-	-	655	-
48	44	Amherst, .	12 10.3	8,000 00	-	-	661	800 00
33	45	New Braintree, .	11 81.2	1,571 00	-	-	133	-
38	46	Wellfleet, .	11 79.2	5,000 00	-	-	424	-
59	47	Longmeadow, .	11 73.8	3,000 00	184 22	3,184 22	267	-
44	48	North Andover, .	11 62.8	6,000 00	-	-	516	-
36	49	Bridgewater, .	11 53.8	7,800 00	-	-	676	-
34	50	Lincoln, .	11 48.6	1,700 00	-	-	148	-
50	51	Quincy, .	11 43.9	17,570 00	-	-	1,536	-
102	52	Walpole, .	11 39.2	4,500 00	-	-	395	-
118	53	Bradford, .	11 33.5	4,500 00	-	-	397	-
45	54	Lunenburg, .	11 29.8	2,175 00	175 00	2,350 00	208	-
117	55	Northborough, .	11 29.3	3,000 00	196 00	3,196 00	283	-
119	56	Winthrop, .	11 29	1,400 00	-	-	124	-
42	57	Greenfield, .	11 17.9	7,300 00	-	-	653	-
107	58	Belchertown, .	11 11.1	5,000 00	-	-	450	-
47	59	Stoneham, .	11 07.6	8,750 00	-	-	790	-
122	60	Boxborough, .	10 88	750 70	-	-	69	-
60	61	Leominster, .	10 87.3	6,600 00	-	-	607	-
86	62	Lenox, .	10 87	3,000 00	-	-	276	-
145	63	Methuen, .	10 80.8	5,500 00	196 00	5,696 00	527	20 00
49	64	Yarmouth, .	10 78.2	4,000 00	-	-	371	-
77	65	Montgomery, .	10 75.4	700 00	42 00	742 00	69	90 00
61	66	Burlington, .	10 67.9	1,100 00	-	-	103	-
32	67	Fairhaven, .	10 67.9	5,500 00	-	-	515	-
81	68	Kingston, .	10 69.8	3,000 00	74 50	3,074 50	289	-
56	69	Westhampton, .	10 58.4	1,450 00	-	-	187	-
147	70	Weymouth, .	10 50.9	20,000 00	-	-	1,903	800 00
84	71	Woburn, .	10 47.4	19,314 95	-	-	1,844	-
63	72	Chicopee, .	10 43.3	17,703 54	699 71	18,403 25	1,764	-
54	73	Leicester, .	10 27.2	4,725 00	-	-	460	95 00
152	74	Stockbridge, .	10 18.3	3,900 00	-	-	383	-
57	75	Wakefield, .	10 17.6	7,500 00	-	-	737	-
80	76	Prescott, .	10 17.4	900 00	36 00	936 00	92	-
70	77	Ashland, .	10 15.2	4,000 00	-	-	394	-
113	78	Warwick, .	10 12.9	1,200 00	56 00	1,256 00	124	-
101	79	Wendell, .	10 12.7	800 00	-	-	79	15 00

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of schools.	Income of Surplus Revenue appropriated to schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
55	80	Erving, .	\$10 03 8	\$1,000 00	\$54 00	\$1,054 00	105	-
127	81	Fitchburg, .	9 97.6	21,000 00	-	-	2,105	-
149	82	Charlton, .	9 96.7	3,000 00	-	-	301	-
112	83	Enfield, .	9 93 4	1,500 00	-	-	151	-
76	84	Bellingham, .	9 91	2,000 00	140 63	2,140 63	216	-
97	85	Wrentham, .	9 84 4	4,000 00	223 22	4,223 22	429	-
69	86	Tyngsborough, .	9 81.3	1,050 00	-	-	107	-
85	87	Newburyport, .	9 78.8	24,000 00	-	-	2,452	-
90	88	Westminster, .	9 72.2	2,800 00	-	-	288	-
64	89	Greenwich, .	9 70.9	1,000 00	-	-	103	-
106	90	Southborough, .	9 69 8	4,500 00	-	-	464	-
156	91	Lynnfield, .	9 67.8	1,200 00	-	-	124	-
73	92	South Hadley, .	9 67 3	5,000 00	155 80	5,155 80	533	\$25 00
89	93	Holyoke, .	9 63 9	18,700 00	-	-	1,940	-
128	94	Wenham, .	9 63.9	1,600 00	-	-	166	-
220	95	Sheffield, .	9 61.7	4,500 00	174 00	4,674 00	486	300 00
140	96	Sherborn, .	9 56 9	2,000 00	-	-	209	-
123	97	Barre, .	9 50.7	4,050 00	-	-	426	-
95	98	Lawrence, .	9 50.5	46,063 66	-	-	4,846	-
96	99	Provincetown, .	9 50	7,000 00	-	-	737	-
83	100	New Salem, .	9 49.4	1,500 00	-	-	158	-
23	101	Beverly, .	9 44.1	12,000 00	-	-	1,271	-
62	102	Dunstable, .	9 41.2	800 00	-	-	85	12 00
99	103	Manchester, .	9 39 6	2,800 00	-	-	298	-
170	104	Georgetown, .	9 37 5	3,900 00	-	-	416	-
98	105	Gloucester, .	9 37 1	29,200 00	-	-	3,116	390 80
254	106	Ashfield, .	9 34.6	2,000 00	-	-	214	204 00
139	107	Dalton, .	9 33.6	2,250 00	-	-	241	64 00
159	108	Adams, .	9 29.4	20,000 00	-	-	2,152	-
87	109	Salem, .	9 28 8	49,597 99	-	-	5,340	-
104	110	Conway, .	9 22.5	2,500 00	-	-	271	102 00
110	111	Lynn, .	9 21.8	54,422 55	-	-	5,904	-
142	112	Orleans, .	9 20.5	2,200 00	-	-	239	-
66	113	Warren, .	9 18 4	4,500 00	-	-	490	72 00
165	114	Shutesbury, .	9 17.4	1,000 00	-	-	109	-
195	115	Medway, .	9 16 7	5,500 00	-	-	600	-
68	116	Shrewsbury, .	9 12.3	2,600 00	-	-	285	-
226	117	Heath, .	9 09.1	1,000 00	-	-	110	-
72	118	Sunderland, .	9 09.1	1,500 00	-	-	165	-
67	119	Barnstable, .	9 03 9	8,000 00	-	-	885	90 00
138	120	Holliston, .	9 02 2	6,000 00	-	-	665	-
-	121	Norfolk, .	9 00.9	2,000 00	-	-	223	-
92	122	Brookfield, .	9 00.7	3,900 00	-	-	433	-
216	123	No Bridgew'r, .	8 96 8	14,250 00	-	-	1,589	-
88	124	Hubbardston, .	8 89 7	2,500 00	-	-	281	7 00
108	125	Gt. Barrington, .	8 84.9	8,000 00	-	-	904	160 00
199	126	Sandwich, .	8 84 4	6,500 00	-	-	735	-
161	127	Cohasset, .	8 77 2	4,000 00	-	-	456	235 00
121	128	Attleborough, .	8 66.3	10,500 00	-	-	1,212	-

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
180	129	Taunton, .	\$8 66 2	\$30,000 00	\$69 09	30,069 09	3,471	-
133	130	E. Bridgewater, .	8 63.6	5,000 00	-	-	579	1,140 00
114	131	Foxborough, .	8 62.6	4,500 00	188 85	4,683 85	543	-
148	132	Harvard, .	8 57.1	2,400 00	-	-	280	-
221	133	Westborough, .	8 56 8	5,835 00	-	-	681	-
151	134	Canton, .	8 55.6	8,000 00	-	-	935	-
75	135	Hull, .	8 53.6	350 00	-	-	41	-
100	136	Marlborough, .	8 52.4	16,000 00	-	-	1,877	-
239	137	Rehoboth, .	8 48.5	2,800 00	-	-	830	-
153	138	Eastham, .	8 47.5	1,000 00	-	-	118	-
79	139	Acushnet, .	8 47.4	2,000 00	-	-	286	-
194	140	Halifax, .	8 47.4	1,000 00	-	-	118	-
202	141	Easton, .	8 46 2	6,400 00	-	-	780	-
143	142	Bedford, .	8 45.7	1,300 00	70 06	1,370 06	162	-
136	143	Dighton, .	8 44.6	2,500 00	-	-	296	-
58	144	Oakham, .	8 44 1	1,300 00	-	-	154	-
78	145	Wayland, .	8 43.9	2,000 00	-	-	237	12 00
124	146	Douglas, .	8 43.4	3,500 00	-	-	415	-
141	147	Hanover, .	8 38.5	2,700 00	-	-	322	-
103	148	Ware, .	8 38	7,000 00	181 37	7,181 37	857	7 00
287	149	Granville, .	8 36.9	1,916 52	-	-	229	-
178	150	Hopkinton, .	8 36 4	9,000 00	-	-	1,076	-
196	151	Littleton, .	8 33.3	1,700 00	-	-	204	-
231	152	Natick, .	8 33 3	11,900 00	-	-	1,428	-
132	153	Saugus, .	8 32 4	3,879 00	-	-	466	-
273	154	Chester, .	8 29 9	2,000 00	-	-	241	125 00
180	155	Southampton, .	8 29 6	1,850 00	-	-	223	22 00
82	156	Hingham, .	8 27.2	6,485 34	-	-	784	-
144	157	Danvers, .	8 26.3	9,599 00	300 00	9,899 00	1,198	-
198	158	Brimfield, .	8 25.7	1,800 00	-	-	218	-
120	159	Lakeville, .	8 23 6	1,688 80	-	-	205	-
115	160	Oxford, .	8 21.2	4,500 00	-	-	548	-
91	161	Westport, .	8 21.2	4,500 00	-	-	548	-
228	162	Deerfield, .	8 18.9	4,930 00	-	-	602	279 19
182	163	Swansea, .	8 12	2,062 48	-	-	254	65 00
233	164	Berkley, .	8 10.8	1,200 00	-	-	148	-
94	165	Townsend, .	8 06.4	3,000 00	-	-	372	-
146	166	Winchendon, .	8 06.4	5,000 00	-	-	620	-
71	167	Uxbridge, .	8 05.6	5,000 00	220 00	5,220 00	648	-
157	168	Hardwick, .	8 04.1	3,000 00	95 63	3,095 63	385	-
162	169	Groton, .	8 01.1	6,000 00	-	-	749	45 00
160	170	W. Bridgewater, .	7 95 8	3,000 00	-	-	877	-
168	171	Acton, .	7 94.1	2,325 00	89 25	2,414 25	804	-
137	172	Fall River, .	7 92.9	46,200 00	-	-	5,827	-
190	173	Franklin, .	7 88 9	4,000 00	-	-	507	55 00
236	174	Athol, .	7 88.6	4,566 00	-	-	579	-
277	175	North Reading, .	7 86.5	1,400 00	-	-	178	-
274	176	Tewksbury, .	7 84	1,800 00	97 27	1,897 27	242	-
184	177	Dracut, .	7 83.3	3,000 00	-	-	383	-

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
207	178	Upton, . . .	\$7 83 2	\$2,772 70	-	-	354	-
176	179	Clinton, . . .	7 82.2	8,361 39	-	-	1,069	-
223	180	Easthampton, . .	7 81.2	6,000 00	-	-	768	-
183	181	Marshfield, . . .	7 79.6	2,800 00	-	-	295	-
186	182	Boylston, . . .	7 79.2	1,200 00	-	-	154	-
297	183	Whately, . . .	7 78.4	1,300 00	-	-	167	-
109	184	Pelham, . . .	7 75 2	1,000 00	-	-	129	-
175	185	Hadley, . . .	7 74 6	3,300 00	-	-	426	-
154	186	Templeton, . . .	7 72.4	3,800 00	-	-	492	-
65	187	Pittsfield, . . .	7 70.8	19,400 00	-	-	2,517	-
214	188	Hamilton, . . .	7 69 2	1,000 00	-	-	130	-
166	189	Ipswich, . . .	7 69 2	4,400 00	-	-	572	-
261	190	Hinsdale, . . .	7 66.9	2,500 00	-	-	326	\$25 00
105	191	Boxford, . . .	7 62.6	1,200 00	\$58 10	\$1,258 10	165	-
204	192	Marblehead, . . .	7 61.2	11,000 00	-	-	1,445	200 00
201	193	Brewster, . . .	7 57.5	2,000 00	-	-	264	-
135	194	Petersham, . . .	7 56.3	1,800 00	-	-	238	-
172	195	Princeton, . . .	7 47.3	1,700 00	71 00	1,771 00	237	-
126	196	Holden, . . .	7 45.9	2,700 00	-	-	362	-
158	197	Plainfield, . . .	7 44.7	700 00	-	-	94	-
163	198	Ashburnham, . . .	7 40 7	3,000 00	-	-	405	-
275	199	Carlisle, . . .	7 39.1	850 00	-	-	115	-
171	200	Falmouth, . . .	7 38.9	3,000 00	-	-	406	10 00
258	201	Sudbury, . . .	7 38.8	2,800 00	-	-	379	-
173	202	Hudson, . . .	7 38.5	5,000 00	-	-	677	-
134	203	Monson, . . .	7 38	4,000 00	-	-	542	-
271	204	Chatham, . . .	7 36.6	4,000 00	-	-	543	-
299	205	Russell, . . .	7 35 3	1,000 00	-	-	136	-
205	206	Dover, . . .	7 34.6	900 00	77 10	977 10	133	-
181	207	Billerica, . . .	7 32.4	2,600 00	-	-	355	-
251	208	Middleton, . . .	7 29.6	1,700 00	-	-	233	-
197	209	Randolph, . . .	7 21.5	10,000 00	-	-	1,386	-
241	210	Hanson, . . .	7 21.1	1,500 00	-	-	208	-
265	211	Grafton, . . .	7 19.6	6,800 00	-	-	945	-
169	212	Goshen, . . .	7 14.8	500 00	-	-	70	185 00
253	213	Shelburne, . . .	7 12.3	2,500 00	-	-	351	240 00
269	214	Wilmington, . . .	7 11.9	1,075 00	-	-	151	-
150	215	Westford, . . .	7 11.8	2,500 00	119 50	2,619 50	368	-
249	216	Egremont, . . .	7 10.9	1,244 03	-	-	175	82 00
212	217	Stoughton, . . .	7 09.2	8,000 00	-	-	1,128	120 00
185	218	Middleborough, . .	7 07.1	7,000 00	-	-	990	-
225	219	Dartmouth, . . .	7 03.1	4,500 00	-	-	640	190 00
305	220	Dudley, . . .	7 02.8	4,200 00	-	-	598	-
210	221	Sturbridge, . . .	7 00.6	2,200 00	-	-	314	-
268	222	Tisbury, . . .	6 98.4	2,200 00	-	-	315	-
93	223	Hawley, . . .	6 92.3	900 00	-	-	130	-
282	224	Salisbury, . . .	6 89.6	4,950 00	167 12	5,117 12	742	-
246	225	Amesbury, . . .	6 88.9	6,600 00	-	-	958	215 00
167	226	South Scituate, . .	6 87.3	2,000 00	-	-	291	-

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
291	227	Leverett, .	\$6 85	\$1,000 00	-	-	146	-
191	228	Mendon, .	6 84.6	1,650 00	-	-	241	-
219	229	Williamstown, .	6 82.9	4,500 00	-	-	659	-
192	230	Bolton, .	6 81.8	1,200 00	-	-	176	\$10 00
189	231	Braintree, .	6 81	6,000 00	-	-	881	-
224	232	West Newbury, .	6 76 3	2,915 13	-	-	431	-
244	233	W. Brookfield, .	6 73 8	2,500 00	-	-	371	-
206	234	Essex, .	6 72	2,500 00	-	-	372	-
123	235	Sterling, .	6 71.1	2,000 00	-	-	298	-
174	236	Rutland, .	6 70 4	1,608 96	-	-	240	-
230	237	Norton, .	6 68 9	2,000 00	-	-	299	-
245	238	Milford, .	6 67.8	16,000 00	-	-	2,396	-
203	239	Paxton, .	6 66.7	800 00	-	-	120	-
270	240	Dennis, .	6 64.9	5,000 00	-	-	752	180 00
129	241	Hatfield, .	6 64.9	2,500 00	-	-	376	-
288	242	Dana, .	6 62.2	1,000 00	-	-	151	-
211	243	Seekonk, .	6 59.3	1,200 00	-	-	182	22 00
187	244	Northfield, .	6 58	2,500 00	-	-	380	-
318	245	Gosnold, .	6 57.9	125 00	-	-	19	-
217	246	Abington, .	6 55 7	14,000 00	-	-	2,135	-
286	247	Sutton, .	6 55.4	3,500 00	-	-	534	-
264	248	Shirley, .	6 53.6	2,000 00	-	-	306	-
267	249	Pembroke, .	6 52.2	1,800 00	-	-	276	-
263	250	Chelmsford, .	6 50.8	3,000 00	-	-	461	-
260	251	Chesterfield, .	6 49 4	1,000 00	-	-	154	519 00
234	252	Northbridge, .	6 48.4	5,200 00	-	-	802	-
243	253	Newbury, .	6 48 1	1,400 00	-	-	216	40 00
290	254	Blackstone, .	6 47 1	6,500 00	\$243 00	\$6,743 00	1,042	-
296	255	Palmer, .	6 44.3	5,000 00	-	-	776	-
237	256	Wareham, .	6 40	4,000 00	-	-	625	-
328	257	Otis, .	6 39.3	1,200 00	65 84	1,265 84	198	148 50
318	258	Coleraine, .	6 39	2,000 00	-	-	313	150 00
242	259	Monroe, .	6 39	250 00	12 00	262 00	41	-
232	260	Rochester, .	6 38.3	1,200 00	-	-	188	-
325	261	Somerset, .	6 37.5	2,524 39	-	-	396	-
272	262	Southbridge, .	6 37.4	7,400 00	-	-	1,161	-
222	263	N. Brookfield, .	6 36.1	5,000 00	-	-	786	-
321	264	Lanesborough, .	6 32 9	2,000 00	-	-	316	-
322	265	Topsfield, .	6 32.9	1,500 00	-	-	237	-
177	266	Orange, .	6 29.7	2,500 00	-	-	397	-
235	267	Phillipston, .	6 28 9	1,000 00	-	-	159	-
289	268	Raynham, .	6 28 7	2,100 00	-	-	334	-
238	269	Lee, .	6 26.4	5,750 00	-	-	918	60 00
216	270	Huntington, .	6 25	1,400 00	-	-	224	36 00
324	271	Charlemont, .	6 21.8	1,200 00	-	-	193	-
218	272	Scituate, .	6 21	2,900 00	-	-	467	-
240	273	Rockport, .	6 20.7	4,963 78	107 00	5,070 78	817	-
164	274	Edgartown, .	6 19.2	2,000 00	-	-	323	-
188	275	Millbury, .	6 18.6	6,000 00	-	-	970	-

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 16 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 16 years of age.	Amount contributed for board and fuel.
256	276	Spencer, .	\$6 18	\$5,000 00	-	-	809	-
255	277	Royalston, .	6 17.3	1,500 00	-	-	248	-
279	278	Peru, .	6 06.1	600 00	-	-	99	-
181	279	Ashby, .	6 00	1,200 00	-	-	200	-
303	280	Wilbraham, .	5 98.1	2,500 00	-	-	418	\$24 00
300	281	Worthington, .	5 98.1	1,000 00	\$178 22	\$1,178 22	197	900 00
208	282	Sharon, .	5 96	1,500 00	270 17	1,770 17	297	-
312	283	Groveland, .	5 90	1,980 00	-	-	336	-
281	284	Tyringham, .	5 88.2	700 00	-	-	119	-
294	285	New Marlboro',	5 87	2,000 00	219 00	2,219 00	378	7 00
247	286	Gardner, .	5 86.4	3,800 00	-	-	648	-
155	287	Rowe, .	5 84	800 00	-	-	187	-
302	288	Montague, .	5 80	2,500 00	-	-	431	-
257	289	Middlefield, .	5 75.9	900 00	90 57	990 57	172	-
276	290	Gill, .	5 73 8	700 00	-	-	122	390 00
316	291	Williamsburg, .	5 68.2	3,000 00	-	-	528	-
193	292	Carver, .	5 67	1,100 00	-	-	194	-
227	293	Rowley, .	5 60 7	1,200 00	-	-	214	-
306	294	Harwich, .	5 55 6	4,500 00	-	-	810	25 00
259	295	Windsor, .	5 55.6	800 00	-	-	144	242 00
252	296	Freetown, .	5 55.5	1,500 00	-	-	270	-
323	297	Tolland, .	5 49.6	600 00	33 00	633 00	115	215 00
295	298	Cummington, .	5 45.5	1,200 00	-	-	220	600 00
283	299	West Boylston, .	5 45 5	3,000 00	-	-	550	00 00
298	300	Becket, .	5 45 4	1,800 00	-	-	330	304 00
278	301	Medfield, .	5 42 9	1,200 00	-	-	221	-
310	302	Auburn, .	5 38 1	1,200 00	-	-	228	-
293	303	Webster, .	5 35.7	4,800 00	-	-	896	-
284	304	Monterey, .	5 29.8	800 00	-	-	151	410 00
285	305	Plympton, .	5 29.4	900 00	-	-	170	-
229	306	Chilmark, .	5 28 8	550 00	-	-	105	-
292	307	Leyden, .	5 21.7	600 00	-	-	115	345 00
209	308	Marion, .	5 20.8	1,000 00	-	-	192	-
317	309	Mansfield, .	5 18 5	2,405 89	-	-	464	-
248	310	Wales, .	5 18 5	700 00	-	-	135	-
213	311	Stow, .	5 16 8	2,000 00	-	-	387	-
266	312	Agawam, .	5 15 3	1,850 00	-	-	359	50 00
179	313	Ludlow, .	5 15	1,200 00	-	-	233	-
307	314	Cheshire, .	5 00	1,810 00	-	-	362	-
304	315	Blandford, .	4 88 3	1,000 00	93 80	1,093 80	221	756 61
333	316	W. Stockbridge, .	4 85.4	2,000 00	-	-	412	66 00
331	317	Bernardston, .	4 80.8	750 00	-	-	156	87 00
250	318	Duxbury, .	4 79 6	2,000 00	-	-	417	-
311	319	Washington, .	4 79	800 00	-	-	167	-
327	320	Holland, .	4 76.2	400 00	-	-	84	-
262	321	Truro, .	4 66.4	1,500 00	25 22	1,525 22	327	-
330	322	Hancock, .	4 63 6	700 00	-	-	151	-
315	323	Berlin, .	4 56 6	1,000 00	-	-	219	-
326	324	Sandisfield, .	4 48.3	1,300 00	-	-	290	312 50

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the sup- port of Schools.	Income of Surplus Revenue and of sim- ilar funds appropri- ated to Schools.	TOTAL.	No. of Children be- tween 5 and 15 years of age.	Amount contributed for board and fuel.
320	325	Mattapoisett, .	\$4 84.8	\$1,200 00	-	-	276	-
-	326	Mashpee, .	4 81	250 00	-	-	58	-
309	327	Pepperell, .	4 29 2	1,545 00	-	-	360	-
308	328	Florida, .	4 23 8	800 00	-	-	189	-
332	329	Buckland, .	4 09.1	1,500 00	\$182 30	\$1,682 80	399	\$60 00
301	330	Southwick, .	4 08.6	900 00	92 96	992 96	243	20 00
280	331	Alford, .	4 05 9	324 71	-	-	80	-
334	332	Mt. Washington, .	4 05.4	300 00	-	-	74	50 00
319	333	New Ashford, .	3 96.1	206 00	-	-	52	12 00
329	334	Richmond, .	3 78 8	800 00	-	-	214	180 85
335	335	Clarksburg, .	3 54.6	500 00	-	-	141	-
314	336	Savoy, .	3 50	633 50	-	-	181	565 21
26		Chelsea,*.	-	-	-	-	-	-
		Ayer,†	-	-	-	-	-	-
		Gay Head,†	-	-	-	-	-	-
		Maynard,†	-	-	-	-	-	-

* No returns received in 1871.

† New towns—no returns made in 1871.

GRADUATED TABLES — FIRST SERIES.

[COUNTY TABLES.]

Table showing the comparative amount of Money appropriated by the different Towns in each of the Counties in the State, for the education of each Child in the Town, between the ages of 5 and 15 years.

BARNSTABLE COUNTY.

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 16 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 16 years of age.	Amount contributed for board and fuel.
1	1	WELLFLEET, .	\$11 79.2	\$5,000 00	-	-	424	-
2	2	Yarmouth, .	10 78.2	4,000 00	-	-	371	-
4	3	Provincetown, .	9 50	7,000 00	-	-	737	-
5	4	Orleans, .	9 20.5	2,200 00	-	-	239	-
3	5	Barnstable, .	9 03.9	8,000 00	-	-	885	\$90 00
8	6	Sandwich, .	8 84.4	6,500 00	-	-	735	-
6	7	Eastham, .	8 47.5	1,000 00	-	-	118	-
9	8	Brewster, .	7 57.5	2,000 00	-	-	264	-
7	9	Falmouth, .	7 38.9	3,000 00	-	-	406	10 00
12	10	Chatham, .	7 36.6	4,000 00	-	-	543	-
11	11	Dennis, .	6 64.9	5,000 00	-	-	752	180 00
13	12	Harwich, .	5 55.6	4,500 00	-	-	810	25 00
10	13	Truro, .	4 66.4	1,500 00	\$25 22	\$1,525 22	327	-
-	14	Mashpee, .	4 31	250 00	-	-	58	-

BERKSHIRE COUNTY.

2	1	LENOX, .	\$10 87	\$3,000 00	-	-	276	-
5	2	Stockbridge, .	10 18.3	3,900 00	-	-	383	-
8	3	Sheffield, .	9 61.7	4,500 00	\$174 00	\$4,674 00	486	\$300 00
4	4	Dalton, .	9 33.6	2,250 00	-	-	241	64 00
6	5	Adams, .	9 29.4	20,000 00	-	-	2,152	-
3	6	Gt. Barrington, .	8 84 9	8,000 00	-	-	904	100 00
1	7	Pittsfield, .	7 70.8	19,400 00	-	-	2,517	-
12	8	Hinsdale, .	7 66.9	2,500 00	-	-	326	25 00
10	9	Egremont, .	7 10.9	1,244 08	-	-	175	83 00
7	10	Williamstown, .	6 82.9	4,500 00	-	-	659	-

BERKSHIRE COUNTY—CONTINUED.

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of alms-house funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
26	11	Otis, . . .	\$6 39.8	\$1,200 00	\$65 84	\$1,265 84	198	\$148 50
24	12	Lanesborough, .	6 32.9	2,000 00	—	—	816	—
9	13	Lee, . . .	6 26.4	5,750 00	—	—	918	60 00
13	14	Peru, . . .	6 06.1	800 00	—	—	99	—
15	15	Tyringham, . .	5 88.2	700 00	—	—	119	—
17	16	New Marlboro',	5 87	2,000 00	219 00	2,219 00	878	7 00
11	17	Windsor, . . .	5 55.6	800 00	—	—	144	242 00
18	18	Becket, . . .	5 45.4	1,800 00	—	—	830	304 00
16	19	Monterey, . . .	5 29.8	800 00	—	—	151	410 00
19	20	Cheshire, . . .	5 00	1,810 00	—	—	362	—
29	21	W. Stockbridge,	4 85.4	2,000 00	—	—	412	66 00
21	22	Washington, . .	4 79	800 00	—	—	167	—
28	23	Hancock, . . .	4 63.6	700 00	—	—	151	—
25	24	Sandisfield, . .	4 48.3	1,300 00	—	—	290	312 50
20	25	Florida, . . .	4 23.3	800 00	—	—	189	—
14	26	Alford, . . .	4 05.9	324 71	—	—	80	—
30	27	Mt. Washington,	4 05.4	300 00	—	—	74	50 00
28	28	New Ashford, . .	3 96.1	206 00	—	—	52	12 00
27	29	Richmond, . . .	3 73.8	800 00	—	—	214	130 85
31	30	Clarksburg, . .	3 54.6	500 00	—	—	141	—
22	31	Savoy, . . .	3 50	633 50	—	—	181	565 21

BRISTOL COUNTY.

1	1	NEW BEDFORD,	\$14 28.1	\$53,938 31	—	—	3,777	—
2	2	Fairhaven, . .	10 67.9	5,500 00	—	—	515	—
5	3	Attleborough, .	8 66.3	10,500 00	—	—	1,212	—
6	4	Taunton, . . .	8 66.2	30,000 00	\$69 09	30,069 09	3,471	—
15	5	Rehoboth, . . .	8 48.5	2,800 00	—	—	330	—
8	6	Acushnet, . . .	8 47.4	2,000 00	—	—	236	—
10	7	Easton, . . .	8 46.2	6,400 00	—	—	780	—
7	8	Dighton, . . .	8 44.6	2,500 00	—	—	296	—
4	9	Westport, . . .	8 21.2	4,500 00	—	—	548	—
9	10	Swansea, . . .	8 12	2,062 48	—	—	254	\$65 00
14	11	Berkley, . . .	8 10.8	1,200 00	—	—	148	—
8	12	Fall River, . .	7 92.9	46,200 00	—	—	5,827	—
12	13	Dartmouth, . .	7 03.1	4,500 00	—	—	640	190 00
13	14	Norton, . . .	6 68.9	2,000 00	—	—	299	—
11	15	Seekonk, . . .	6 59.8	1,200 00	—	—	182	22 00
19	16	Somerset, . . .	6 37.5	2,524 39	—	—	396	—
17	17	Raynham, . . .	6 28.7	2,100 00	—	—	334	—
16	18	Freetown, . . .	5 55.5	1 500 00	—	—	270	—
18	19	Mansfield, . .	5 18.5	2,405 89	—	—	464	—

DUKES COUNTY.

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
8	1	TISBURY, .	\$6 98.4	\$2,200 00	-	-	315	-
4	2	Gosnold, .	6 57.9	125 00	-	-	19	-
1	3	Edgartown, .	6 19 2	2,000 00	-	-	328	-
2	4	Chilmark, .	5 23.8	550 00	-	-	105	-
-	5	Gay Head, .	-	-	-	-	-	-

ESSEX COUNTY.

1	1	NAHANT, .	\$17 89.5	\$1,700 00	-	-	95	-
2	2	Swampscott, .	15 94 2	5,500 00	-	-	345	-
14	3	Andover, .	13 92	9,576 42	-	-	688	-
6	4	Peabody, .	13 19.4	19,000 00	-	-	1,440	-
4	5	Haverhill, .	12 24 4	26,000 00	\$521 18	26,521 18	2,166	-
5	6	North Andover, .	11 62.8	6,000 00	-	-	516	-
15	7	Bradford, .	11 83.5	4,500 00	-	-	397	-
19	8	Methuen, .	10 80.8	5,500 00	196 00	5,696 00	527	\$20 00
7	9	Newburyport, .	9 78 8	24,000 00	-	-	2,452	-
20	10	Lynnfield, .	9 67.8	1,200 00	-	-	124	-
16	11	Wenham, .	9 63.9	1,600 00	-	-	166	-
9	12	Lawrence, .	9 50.5	46,068 66	-	-	4,846	-
3	13	Beverly, .	9 44.1	12,000 00	-	-	1,271	-
11	14	Manchester, .	9 39.6	2,800 00	-	-	298	-
22	15	Georgetown, .	9 37.5	3,900 00	-	-	416	-
10	16	Gloucester, .	9 87.1	29,200 00	-	-	3,116	390 80
8	17	Salem, .	9 28.8	49,597 99	-	-	5,340	-
13	18	Lynn, .	9 21 8	54,422 55	-	-	5,904	-
17	19	Saugus, .	8 82.4	3,879 00	-	-	466	-
18	20	Danvers, .	8 26.3	9,599 00	800 00	9,899 00	1,198	-
25	21	Hamilton, .	7 69.2	1,000 00	-	-	130	-
21	22	Ipswich, .	7 69.2	4,400 00	-	-	572	-
12	23	Boxford, .	7 62.6	1,200 00	58 10	1,258 10	165	-
23	24	Marblehead, .	7 61.2	11,000 00	-	-	1,445	200 00
31	25	Middleton, .	7 29 6	1,700 00	-	-	233	-
32	26	Salisbury, .	6 89.6	4,950 00	167 12	5,117 12	742	-
30	27	Amesbury, .	6 88.9	6,600 00	-	-	958	215 00
26	28	West Newbury, .	6 76 3	2,915 18	-	-	431	-
24	29	Essex, .	6 72	2,500 00	-	-	372	-
29	30	Newbury, .	6 48.1	1,400 00	-	-	216	40 00
34	31	Topsfield, .	6 32 9	1,500 00	-	-	237	-
28	32	Rockport, .	6 20.7	4,963 78	107 00	5,070 78	817	-
33	33	Groveland, .	5 80	1,980 00	-	-	336	-
27	34	Rowley, .	5 60.7	1,200 00	-	-	214	-

FRANKLIN COUNTY.

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
1	1	GREENFIELD, .	\$11 17.9	\$7,300 00	-	-	653	-
8	2	Warwick, .	10 12.9	1,200 00	\$56 00	\$1,256 00	124	-
6	3	Wendell, .	10 12.7	800 00	-	-	79	\$15 00
2	4	Erving, .	10 03.8	1,000 00	54 00	1,054 00	105	-
4	5	New Salem, .	9 49.4	1,500 00	-	-	158	-
17	6	Ashfield, .	9 34.6	2,000 00	-	-	214	204 00
7	7	Conway, .	9 22.5	2,500 00	-	-	271	102 00
10	8	Shutesbury, .	9 17.4	1,000 00	-	-	109	-
13	9	Heath, .	9 09.1	1,000 00	-	-	110	-
8	10	Sunderland, .	9 09.1	1,500 00	-	-	165	-
14	11	Deerfield, .	8 18.9	4,930 00	-	-	602	279 19
21	12	Whately, .	7 78.4	1,800 00	-	-	167	-
16	13	Shelburne, .	7 12.3	2,500 00	-	-	851	240 00
5	14	Hawley, .	6 92.3	900 00	-	-	180	-
19	15	Leverett, .	6 85	1,000 00	-	-	146	-
12	16	Northfield, .	6 58	2,500 00	-	-	380	-
23	17	Coleraine, .	6 39	2,000 00	-	-	313	150 00
15	18	Monroe, .	6 39	250 00	12 00	262 00	41	-
11	19	Orange, .	6 29.7	2,500 00	-	-	897	-
24	20	Charlemont, .	6 21.8	1,200 00	-	-	193	-
9	21	Rowe, .	5 84	800 00	-	-	137	-
22	22	Montague, .	5 80	2,500 00	-	-	431	-
18	23	Gill, .	5 73.8	700 00	-	-	122	390 00
20	24	Leyden, .	5 21.7	600 00	-	-	115	345 00
25	25	Bernardston, .	4 80.8	750 00	-	-	156	87 00
26	26	Buckland, .	4 09.1	1,500 00	182 80	1,682 80	399	60 00

HAMPDEN COUNTY.

1	1	SPRINGFIELD, .	\$16 00	\$67,714 22	-	-	4,232	-
2	2	Westfield, .	14 58.9	16,500 00	-	-	1,181	-
10	3	W. Springfield, .	13 92.1	6,000 00	-	-	431	-
3	4	Longmeadow, .	11 73.8	3,000 00	\$184 22	\$3,184 22	267	-
5	5	Montgomery, .	10 75.4	700 00	42 00	742 00	69	\$90 00
4	6	Chicopee, .	10 43.3	17,703 54	699 71	18,403 25	1,764	-
6	7	Holyoke, .	9 63.9	18,700 00	-	-	1,940	-
14	8	Granville, .	8 36.9	1,916 52	-	-	229	-
18	9	Chester, .	8 29.9	2,000 00	-	-	241	125 00
9	10	Brimfield, .	8 25.7	1,800 00	-	-	218	-
7	11	Monson, .	7 38	4,000 00	-	-	542	-
16	12	Russell, .	7 35.3	1,000 00	-	-	136	-
15	13	Palmer, .	6 44.3	5,000 00	-	-	776	-
13	14	Wilbraham, .	5 98.1	2,500 00	-	-	418	24 00
20	15	Tolland, .	5 49.6	600 00	33 00	633 00	115	215 60
11	16	Wales, .	5 18.5	700 00	-	-	185	-

HAMPDEN COUNTY—CONTINUED.

For 1860-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
12	17	Agawam, .	\$5 15 8	\$1,850 00	—	—	359	\$50 00
8	18	Ludlow, .	5 15	1,200 00	—	—	233	—
19	19	Blandford, .	4 88.3	1,000 00	\$93 80	\$1,093 80	224	756 61
21	20	Holland, .	4 76.2	400 00	—	—	84	—
17	21	Southwick, .	4 08.6	900 00	92 96	992 96	243	20 00

HAMPSHIRE COUNTY.

6	1	NORTHAMPTON, .	\$12 39.3	\$24,080 00	—	—	1,943	—
2	2	Granby, .	12 26.1	1,925 00	—	—	157	—
1	3	Amherst, .	12 10.3	8,000 00	—	—	661	\$300 00
9	4	Belchertown, .	11 11.1	5,000 00	—	—	450	—
3	5	Westhampton, .	10 58.4	1,450 00	—	—	137	—
7	6	Prescott, .	10 17.4	900 00	\$36 00	\$936 00	92	—
11	7	Enfield, .	9 93.4	1,500 00	—	—	151	—
4	8	Greenwich, .	9 70.9	1,000 00	—	—	103	—
5	9	South Hadley, .	9 67.3	5,000 00	155 80	5,155 80	533	25 00
8	10	Ware, .	8 38	7,000 00	181 37	7,181 37	857	7 00
16	11	Southampton, .	8 29.6	1,850 00	—	—	223	22 00
18	12	Easthampton, .	7 81.2	6,000 00	—	—	768	—
10	13	Pelham, .	7 75.2	1,000 00	—	—	129	—
15	14	Hadley, .	7 74 6	3,300 00	—	—	426	—
13	15	Plainfield, .	7 44 7	700 00	—	—	94	—
14	16	Goshen, .	7 14.3	500 00	—	—	70	188 00
12	17	Hatfield, .	6 64 9	2,500 00	—	—	376	—
20	18	Chesterfield, .	6 49 4	1,000 00	—	—	154	519 00
17	19	Huntington, .	6 25	1,400 00	—	—	224	96 00
22	20	Worthington, .	5 98.1	1,000 00	178 22	1,178 22	197	900 00
19	21	Middlefield, .	5 75 9	900 00	90 57	990 57	172	—
23	22	Williamsburg, .	5 68 2	3,000 00	—	—	528	—
21	23	Cummington, .	5 45.5	1,200 00	—	—	220	600 00

MIDDLESEX COUNTY.

2	1	NEWTON, .	\$22 63 2	\$54,000 00	—	—	2,366	—
4	2	Belmont, .	22 52 7	6,150 00	—	—	273	—
8	3	Lexington, .	21 21.2	7,000 00	—	—	830	—
1	4	Brighton, .	20 30.7	17,200 00	—	—	847	—
12	5	Somerville, .	18 07.4	46,450 00	—	—	2,570	—
6	6	Waltham, .	17 77.1	25,234 77	—	—	1,420	—
5	7	Medford, .	17 67.2	19,740 00	—	—	1,117	—
3	8	Arlington, .	16 97.4	11,457 59	—	—	675	—

MIDDLESEX COUNTY—CONTINUED.

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
9	9	Framingham, .	\$16 66.6	\$12,400 00	-	-	744	-
11	10	Weston, .	15 98.5	8,133 00	-	-	196	-
7	11	Watertown, .	15 98.2	14,000 00	-	-	876	-
16	12	Winchester, .	15 20.3	9,000 00	-	-	592	-
13	13	Charlestown, .	14 81.3	90,075 53	-	-	6,081	-
-	14	Everett, .	14 35.2	6,200 00	-	-	432	-
18	15	Cambridge, .	13 72.1	110,951 98	-	-	8,086	-
14	16	Lowell, .	13 65	87,865 17	-	-	6,437	-
15	17	Malden, .	13 40.8	19,000 00	-	-	1,417	-
21	18	Reading, .	12 79.7	7,000 00	-	-	547	\$300 00
10	19	Melrose, .	12 77.3	8,200 00	-	-	642	-
19	20	Concord, .	12 58.9	5,800 00	-	-	421	-
17	21	Lincoln, .	11 48.6	1,700 00	-	-	148	-
20	22	Stoneham, .	11 07.6	8,750 00	-	-	790	-
31	23	Boxborough, .	10 88	750 70	-	-	69	-
23	24	Burlington, .	10 67.9	1,100 00	-	-	103	-
28	25	Woburn, .	10 47.4	19,314 95	-	-	1,844	-
22	26	Wakefield, .	10 17.6	7,500 00	-	-	737	-
26	27	Ashland, .	10 15.2	4,000 00	-	-	394	-
25	28	Tyngsborough, .	9 81.8	1,050 00	-	-	107	-
34	29	Sherborn, .	9 56.9	2,000 00	-	-	209	-
24	30	Dunstable, .	9 41.2	800 00	-	-	85	12 00
33	31	Holliston, .	9 02.2	6,000 00	-	-	665	-
30	32	Marlborough, .	8 52.4	16,000 00	-	-	1,877	-
35	33	Bedford, .	8 45.7	1,300 00	\$70 06	\$1,370 06	162	-
27	34	Wayland, .	8 43.9	2,000 00	-	-	237	12 00
40	35	Hopkinton, .	8 36.4	9,000 00	-	-	1,076	-
43	36	Littleton, .	8 33.8	1,700 00	-	-	204	-
45	37	Natick, .	8 33.3	11,900 00	-	-	1,428	-
29	38	Townsend, .	8 06.4	3,000 00	-	-	372	-
37	39	Groton, .	8 01.1	6,000 00	-	-	749	45 00
38	40	Acton, .	7 94.1	2,325 00	89 25	2,414 25	304	-
52	41	North Reading, .	7 86.5	1,400 00	-	-	178	-
50	42	Tewksbury, .	7 84	1,800 00	97 27	1,897 27	242	-
42	43	Dracut, .	7 83.3	3,000 00	-	-	383	-
51	44	Carlisle, .	7 39.1	850 00	-	-	115	-
46	45	Sudbury, .	7 38.8	2,800 00	-	-	379	-
39	46	Hudson, .	7 38.5	5,000 00	-	-	677	-
41	47	Billerica, .	7 32.4	2,600 00	-	-	355	-
49	48	Wilmington, .	7 11.9	1,075 00	-	-	151	-
36	49	Westford, .	7 11.8	2,500 00	119 50	2,619 50	368	-
48	50	Shirley, .	6 53.6	2,000 00	-	-	306	-
47	51	Chelmsford, .	6 50.8	3,000 00	-	-	461	-
32	52	Ashby, .	6 00	1,200 00	-	-	200	-
44	53	Stow, .	5 16.8	2,000 00	-	-	387	-
53	54	Pepperell, .	4 29.2	1,545 00	-	-	360	-
	55	Ayer, .	-	-	-	-	-	-
	56	Maynard, .	-	-	-	-	-	-

NANTUCKET COUNTY.

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
		NANTUCKET, .	\$12 21.4	\$8,000 00	-	-	655	-

NORFOLK COUNTY.

3	1	BROOKLINE, .	\$25 82.9	\$28,490 04	-	-	1,103	-
4	2	Milton, .	21 45.9	10,000 00	-	-	466	-
2	3	West Roxbury,	18 40.5	30,000 00	-	-	1,630	-
5	4	Hyde Park, .	15 78.9	15,000 00	-	-	950	-
6	5	Needham, .	14 51.4	10,000 00	-	-	689	-
7	6	Dedham, .	13 54.3	19,217 50	-	-	1,419	-
8	7	Quincy, .	11 43.9	17,570 00	-	-	1,536	-
11	8	Walpole, .	11 39 2	4,500 00	-	-	395	-
13	9	Weymouth, .	10 50.9	20,000 00	-	-	1,903	\$300 00
9	10	Bellingham, .	9 91	2,000 00	\$140 68	\$2,140 68	216	-
10	11	Wrentham, .	9 84.4	4,000 00	223 22	4,223 22	429	-
18	12	Medway, .	9 16.7	5,500 00	-	-	600	-
-	13	Norfolk, .	9 00 9	2,000 00	-	-	222	-
15	14	Cohasset, .	8 77.2	4,000 00	-	-	456	235 00
12	15	Foxborough, .	8 62.6	4,500 00	183 85	4,683 85	543	-
14	16	Canton, .	8 55.6	8,000 00	-	-	935	-
17	17	Franklin, .	7 88 9	4,000 00	-	-	507	55 00
20	18	Dover, .	7 34.6	900 00	77 10	977 10	133	-
19	19	Randolph, .	7 21.5	10,000 00	-	-	1,386	-
22	20	Stoughton, .	7 09.2	8,000 00	-	-	1,128	120 00
16	21	Braintree, .	6 81	6,000 00	-	-	881	-
21	22	Sharon, .	5 96	1,500 00	270 17	1,770 17	297	-
23	23	Medfield, .	5 42.9	1,200 00	-	-	221	-

PLYMOUTH COUNTY.

2	1	PLYMOUTH, .	\$12 69.7	\$14,500 00	-	-	1,142	-
1	2	Bridgewater, .	11 53.8	7,800 00	-	-	676	-
4	3	Kingston, .	10 63.8	3,000 00	\$74 50	\$3,074 50	289	-
16	4	N. Bridgewater,	8 96 8	14,250 00	-	-	1,569	-
7	5	E. Bridgewater,	8 63.6	5,000 00	-	-	579	1,140 00
3	6	Hull, .	8 53.6	350 00	-	-	41	-
14	7	Halifax, .	8 47.4	1,000 00	-	-	118	-
8	8	Hanover, .	8 38.5	2,700 00	-	-	322	-
5	9	Hingham, .	8 27.2	6,485 34	-	-	784	-
6	10	Lakeville, .	8 23.6	1,688 80	-	-	205	-
9	11	W. Bridgewater,	7 95.8	3,000 00	-	-	377	-
11	12	Marshfield, .	7 79.6	2,800 00	-	-	295	-

PLYMOUTH COUNTY—CONTINUED.

For 1866-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
21	18	Hanson, .	\$7 21.1	\$1,500 00	-	-	208	-
12	14	Middleborough,	7 07.1	7,000 00	-	-	990	-
10	15	South Scituate,	6 87.3	2,000 00	-	-	291	-
17	16	Abington, .	6 55.7	14,000 00	-	-	2,185	-
23	17	Pembroke, .	6 52.2	1,800 00	-	-	276	-
20	18	Wareham, .	6 40	4,000 00	-	-	625	-
19	19	Rochester, .	6 38.3	1,200 00	-	-	188	-
18	20	Scituate, .	6 21	2,900 00	-	-	467	-
13	21	Carver, .	5 67	1,100 00	-	-	194	-
24	22	Plympton, .	5 29.4	900 00	-	-	170	-
15	23	Marion, .	5 20.8	1,000 00	-	-	192	-
22	24	Duxbury, .	4 79.3	2,000 00	-	-	417	-
25	25	Mattapoisett, .	4 34.8	1,200 00	-	-	276	-

SUFFOLK COUNTY.

1	1	BOSTON, .	\$19 56.8	\$906,000 00	-	-	46801	-
8	2	Revere, .	14 12.6	2,700 00	-	-	191	-
4	3	Winthrop, .	11 29	1,400 00	-	-	124	-
2	-	Chelsea,* .	-	-	-	-	-	-

WORCESTER COUNTY.

15	1	LANCASTER, .	\$18 12.2	\$4,200 00	-	-	320	-
1	2	Worcester, .	12 84.8	96,606 29	-	-	7,519	-
2	3	New Braintree,	11 81.2	1,571 00	-	-	188	-
8	4	Lunenburg, .	11 29.8	2,175 00	\$175 00	\$2,350 00	208	-
16	5	Northborough, .	11 29.3	3,000 00	196 00	3,196 00	283	-
6	6	Leominster, .	10 87.3	6,600 00	-	-	607	-
4	7	Leicester, .	10 27.2	4,725 00	-	-	460	\$95 00
21	8	Fitchburg, .	9 97.6	21,000 00	-	-	2,105	-
25	9	Charlton, .	9 96.7	3,000 00	-	-	301	-
11	10	Westminster, .	9 72.2	2,800 00	-	-	288	-
13	11	Southborough, .	9 69.8	4,500 00	-	-	464	-
17	12	Barre, .	9 50.7	4,050 00	-	-	426	-
7	13	Warren, .	9 18.4	4,500 00	-	-	490	72 00
8	14	Shrewsbury, .	9 12.3	2,600 00	-	-	285	-
12	15	Brookfield, .	9 00.7	3,900 00	-	-	433	-
10	16	Hubbardston, .	8 89.7	2,500 00	-	-	281	7 00
24	17	Harvard, .	8 57.1	2,400 00	-	-	280	-
39	18	Westborough, .	8 56.8	5,835 00	-	-	681	-
5	19	Oakham, .	8 44.1	1,300 00	-	-	154	-

* No returns.

WORCESTER COUNTY—CONTINUED.

For 1869-70.	For 1870-71.	TOWNS.	Sum appropriated by towns for each child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and of similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
18	20	Douglas, .	\$8 43.4	\$3,500 00	-	-	415	-
14	21	Oxford, .	8 21.2	4,500 00	-	-	548	-
23	22	Winchendon, .	8 06.4	5,000 00	-	-	620	-
9	23	Uxbridge, .	8 05.6	5,000 00	\$220 00	\$5,220 00	648	-
27	24	Hardwick, .	8 04.1	3,000 00	95 63	3,095 63	385	-
43	25	Athol, .	7 88.6	4,566 00	-	-	579	-
37	26	Upton, .	7 83.2	2,772 70	-	-	354	-
31	27	Clinton, .	7 82.2	8,361 89	-	-	1,069	-
32	28	Boylston, .	7 79.2	1,200 00	-	-	154	-
26	29	Templeton, .	7 72.4	3,800 00	-	-	492	-
22	30	Petersham, .	7 56.3	1,800 00	-	-	238	-
29	31	Princeton, .	7 47.3	1,700 00	71 00	1,771 00	237	-
20	32	Holden, .	7 45.9	2,700 00	-	-	362	-
28	33	Ashburnham, .	7 40.7	3,000 00	-	-	405	-
49	34	Grafton, .	7 19.6	6,800 00	-	-	945	-
56	35	Dudley, .	7 02.3	4,200 00	-	-	598	-
38	36	Sturbridge, .	7 00.6	2,200 00	-	-	314	-
34	37	Mendon, .	6 84.6	1,650 00	-	-	241	-
35	38	Bolton, .	6 81.8	1,200 00	-	-	176	\$10 00
44	39	W. Brookfield, .	6 73.8	2,500 00	-	-	371	-
19	40	Sterling, .	6 71.1	2,000 00	-	-	298	-
30	41	Rutland, .	6 70.4	1,608 96	-	-	240	-
45	42	Milford, .	6 67.8	16,000 00	-	-	2,396	-
36	43	Paxton, .	6 66.7	800 00	-	-	120	-
53	44	Dana, .	6 62.2	1,000 00	-	-	151	-
52	45	Sutton, .	6 55.4	3,500 00	-	-	534	-
41	46	Northbridge, .	6 48.4	5,200 00	-	-	802	-
54	47	Blackstone, .	6 47.1	6,500 00	243 00	6,743 00	1,042	-
50	48	Southbridge, .	6 37.4	7,400 00	-	-	1,161	-
40	49	N. Brookfield, .	6 36.1	5,000 00	-	-	786	-
42	50	Phillipston, .	6 28.9	1,000 00	-	-	159	-
33	51	Millbury, .	6 18.6	6,000 00	-	-	970	-
43	52	Spencer, .	6 18	5,000 00	-	-	809	-
47	53	Royalston, .	6 17.3	1,500 00	-	-	243	-
46	54	Gardner, .	5 86.5	3,800 00	-	-	648	-
51	55	West Boylston, .	5 45.5	3,000 00	-	-	550	60 00
57	56	Auburn, .	5 38.1	1,200 00	-	-	223	-
55	57	Webster, .	5 35.7	4,800 00	-	-	896	-
58	58	Berlin, .	4 56.6	1,000 00	-	-	219	-

A GRADUATED TABLE—FIRST SERIES.

Showing the Comparative Amount of Money appropriated by the different Counties in the State for the Education of each Child between the ages of 5 and 15 years in the County.

For 1887.	For 1870-71.	COUNTIES.	Sum appropriated by Counties for each Child between 5 and 15 years of age.	Amount raised by taxes for the support of Schools.	Income of Surplus Revenue and similar funds appropriated to Schools.	TOTAL.	No. of Children between 5 and 15 years of age.	Amount contributed for board and fuel.
1	1	SUFFOLK,	\$19 16.1	\$952,705 00	-	\$952,705 00	\$49,722 00	-
3	2	Middlesex,	13 17 1	687,318 69	\$376 08	689,694 77	52,211 00	\$369 00
4	3	Nantucket,	12 21.3	8,000 00	-	8,000 00	655 00	-
2	4	Norfolk,	12 04.1	216,377 54	894 97	217,272 51	18,045 00	710 00
5	5	Hampden,	11 33.5	155,184 28	1,095 69	156,279 97	13,787 00	1,281 21
7	6	Essex,	9 43.8	363,347 53	1,349 40	364,696 93	38,639 00	865 80
9	7	Hampshire,	9 33	80,205 00	641 96	80,846 96	8,665 00	2,597 00
6	8	Bristol,	9 20.5	183,831 07	69 09	183,900 16	19,979 00	277 00
8	9	Worcester,	8 73	323,019 34	1,000 63	324,019 97	37,116 00	244 00
11	10	Barnstable,	8 09.3	53,950 00	25 22	53,975 22	6,669 00	305 00
10	11	Plymouth,	7 99.1	102,673 64	74 50	102,748 14	12,846 00	1,140 00
13	12	Franklin,	7 57.8	45,730 00	254 30	45,984 30	6,068 00	1,872 19
12	13	Berkshire,	7 30.4	95,118 24	458 84	95,577 08	13,085 00	2,879 06
14	14	Dukes,	6 39.7	4,875 00	-	4,875 00	762 00	-

AGGREGATE FOR THE STATE.

State,	\$11 78.3	\$3,272,335 33	\$6,240 68	\$3,278,576 01	\$278,249 00	\$12,540 26
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A GRADUATED TABLE — FIRST SERIES.

Showing the Comparative Amount of Money, including Voluntary Contributions, appropriated by the different Counties in the State, for the Education of each Child between the ages of 5 and 15 years in the County.

For 1869-70.	For 1870-71.	COUNTIES.	TOTALS.
1	1	SUFFOLK,	\$19 16 1
3	2	Middlesex,	13 17.8
4	3	Nantucket,	12 21 3
2	4	Norfolk,	12 08
5	5	Hampden,	11 42.8
8	6	Hampshire,	9 63.
7	7	Essex,	9 46.1
6	8	Bristol,	9 21.9
9	9	Worcester,	8 73.6
11	10	Barnstable,	8 14
10	11	Plymouth,	8 08
13	12	Franklin,	7 88.7
12	13	Berkshire,	7 52.4
14	14	Dukes,	6 39.7
Aggregate for the State,			\$11 52.8

GRADUATED TABLES—SECOND SERIES.

The next Table exhibits the appropriation of the cities and towns, as compared with their respective valuations in 1865.

The first column shows the rank of the cities and towns in a similar Table for 1869-70.

The second column indicates, in numerical order, the precedence of the cities and towns in respect to the liberality of their appropriations for 1870-71.

The third consists of the names of the cities and towns, as numerically arranged.

The fourth shows the percentage of taxable property appropriated to the support of the Public Schools. The result is equivalent in value to mills and hundredths of mills. The decimals are carried to three figures in order to indicate more perfectly the distinction between the different towns. The first figure (mills) expresses the principal value, and is separated from the last two figures by a point.

The appropriations for schools are not given in the following Table, as they may be found by referring to the previous Tables, also in the Abstract of School Returns, commencing on page ii. These appropriations include the sum raised by taxes, the income of the surplus revenue, and of such other funds as the towns may appropriate at their option, either to support Common Schools, or to pay ordinary municipal expenses. The income of other local funds, and the voluntary contributions are not included in the estimate. The appropriations are reckoned the same as in the first series of tables, and for the same reasons.

The amount of taxable property, in each city and town, according to the last State Valuation, is also omitted, as it is already given in the foregoing Abstract of School Returns.

If the rank assigned to towns in the next Tables is compared with the rank of the same town in the former series, it will be seen that they hold, in many instances, a very different place in the scale.

GRADUATED TABLES — SECOND SERIES.

[FOR THE STATE.]

A Graduated Table, in which all the Towns in the State are numerically arranged, according to the percentage of their taxable property, appropriated to the support of Public Schools, for the year 1870-71.

For 1869-70, according to Valuation of 1865.	For 1870-71, according to Valuation of 1865.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
2	1	SOMERVILLE, .	\$.008-17	33	33	Springfield, .	\$.005-06
4	2	Holyoke, .	7-25	94	34	Northampton, .	5-03
1	3	Wellfleet, .	7-14	18	35	Westhampton, .	4-93
16	4	Westborough, .	6-78	60	36	Peabody, .	4-97
8	5	Stoneham, .	6-56	63	37	Fitchburg, .	4-95
10	6	Gloucester, .	6-48	8	38	Hawley, .	4-93
28	7	Natick, .	6-46	31	39	Charlestown, .	4-92
50	8	No Bridgew'r, .	6-45	41	40	Worcester, .	4-90
15	9	Ashland, .	6-32	49	41	Milford, .	4-89
7	10	Marlborough, .	6-32	35	42	Northbridge, .	4-88
19	11	Winchester, .	6-18	76	43	No. Brookfield, .	4-83
56	12	Dudley, .	6-16	11	44	Melrose, .	4-81
6	13	Erving, .	6-08	22	45	Attleborough, .	4-77
51	14	Weymouth, .	5-98	5	46	Malden, .	4-70
29	15	Adams, .	5-97	187	47	Russell, .	4-70
9	16	Haverhill, .	5-91	73	48	Southborough, .	4-70
32	17	Chicopee, .	5-88	55	49	Montgomery, .	4-67
14	18	Warwick, .	5-69	46	50	South Hadley, .	4-67
27	19	Hopkinton, .	5-64	38	51	Bellingham, .	4-61
21	20	Needham, .	5-56	78	52	Plymouth, .	4-61
20	21	Newton, .	5-51	40	53	Stoughton, .	4-59
30	22	Ware, .	5-49	43	54	Warren, .	4-59
192	23	Heath, .	5-47	58	55	Quincy, .	4-56
24	24	Lynn, .	5-41	42	56	Abington, .	4-57
64	25	Reading, .	5-41	44	57	Shutesbury, .	4-56
69	26	Bradford, .	5-40	45	58	Eastham, .	4-56
17	27	Florida, .	5-24	87	59	Waltham, .	4-53
25	28	Marblehead, .	5-16	228	60	W. Springfield, .	4-55
92	29	Georgetown, .	5-13	47	61	Wareham, .	4-53
36	30	Watertown, .	5-08	48	62	Webster, .	4-53
82	31	Westfield, .	5-08	85	63	Belchertown, .	4-51
13	32	Pelham, .	5-06	39	64	Brighton, .	4-51

For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools equivalent to mills and hundredths of mills.	For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools equivalent to mills and hundredths of mills.
127	65	Chester, .	3.004-49	108	114	Bridgewater, .	3.008-91
52	66	New Salem, .	4-46	97	115	Templeton, .	3-88
83	67	Provincetown, .	4-44	98	116	Westminster, .	3-88
72	68	Framingham, .	4-48	99	117	Williamstown, .	3-88
23	69	Rowe, .	4-48	244	118	Sheffield, .	3-87
65	70	Danvers, .	4-42	155	119	Woburn, .	3-87
37	71	West Boylston, .	4-42	132	120	Groton, .	3-86
125	72	Methuen, .	4-41	118	121	Greenfield, .	3-84
95	73	Harwich, .	4-39	102	122	Franklin, .	3-82
88	74	Medway, .	4-39	159	123	Grafton, .	3-82
53	75	Southbridge, .	4-36	101	124	Greenwich, .	3-82
136	76	Middleton, .	4-33	129	125	Sandwich, .	3-81
86	77	Amherst, .	4-31	104	126	Ashburnham, .	3-80
57	78	E. Bridgewater, .	4-31	112	127	Braintree, .	3-80
62	79	Millbury, .	4-31	105	128	Swampscott, .	3-80
100	80	Winchendon, .	4-30	138	129	Upton, .	3-77
124	81	Cambridge, .	4-28	107	130	Becket, .	3-76
67	82	Dennis, .	4-23	109	131	Clarksburg, .	3-75
84	83	Prescott, .	4-22	162	132	Granville, .	3-71
77	84	Truro, .	4-22	113	133	Nantucket, .	3-71
68	85	Wakefield, .	4-22	115	134	Southampton, .	3-68
114	86	Athol, .	4-21	116	135	Gt. Barrington, .	3-67
71	87	Gardner, .	4-20	154	136	Spencer, .	3-67
79	88	Lowell, .	4-19	158	137	Rehoboth, .	3-66
272	89	Lancaster, .	4-18	137	138	Fall River, .	3-65
74	90	Orange, .	4-17	96	139	Foxborough, .	3-65
106	91	Clinton, .	4-14	121	140	Manchester, .	3-65
153	92	Dana, .	4-13	146	141	Chatham, .	3-63
122	93	Montague, .	4-12	119	142	Lenox, .	3-63
75	94	Granby, .	4-09	168	143	Canton, .	3-62
110	95	Lawrence, .	4-09	123	144	Sunderland, .	3-62
34	96	Oakham, .	4-09	149	145	Hanover, .	3-61
81	97	Townsend, .	4-07	198	146	N. Marlboro', .	3-60
108	98	Deerfield, .	4-06	131	147	Medford, .	3-59
247	99	Otis, .	4-06	26	148	Beverly, .	3-57
59	100	Arlington, .	4-04	89	149	Conway, .	3-55
66	101	Douglas, .	4-02	152	150	Taunton, .	3-55
70	102	Brookfield, .	4-01	220	151	Andover, .	3-54
139	103	Lexington, .	4-01	54	152	Barnstable, .	3-53
128	104	Holliston, .	3-99	169	153	Easthampton, .	3-53
167	105	Palmer, .	3-99	173	154	Leverett, .	3-51
172	106	Berkley, .	3-97	126	155	Northfield, .	3-51
184	107	Walpole, .	3-97	135	156	Cummington, .	3-50
91	108	Oxford, .	3-96	161	157	Wenham, .	3-45
80	109	Rockport, .	3-96	264	158	Winthrop, .	3-45
90	110	Wendell, .	3-96	140	159	Huntington, .	3-42
117	111	Dedham, .	3-95	179	160	Lee, .	3-42
93	112	Orleans, .	3-94	283	161	Mt Washington, .	3-42
130	113	Amesbury, .	3-93	141	162	Randolph, .	3-42

For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
148	163	Leominster, .	\$.003-41	120	212	Wrentham, .	\$.002-99
196	164	Cohasset, .	3-40	209	213	Saugus, .	2-98
133	165	Scituate, .	3-40	241	214	Groveland, .	2-97
176	166	Blackstone, .	3-38	178	215	Lakeville, .	2-96
145	167	Hubbardston, .	3-37	200	216	Shirley, .	2-96
194	168	Northborough, .	3-34	199	217	Plympton, .	2-95
232	169	Easton, .	3-31	240	218	Stockbridge, .	2-94
165	170	Charlton, .	3-30	205	219	Plainfield, .	2-93
174	171	Monroe, .	3-30	182	220	Leicester, .	2-92
183	172	Nahant, .	3-29	310	221	Somerset, .	2-92
160	173	Middleborough, .	3-28	271	222	Wilbraham, .	2-87
170	174	North Andover, .	3-28	231	223	New Braintree, .	2-84
230	175	Charlemont, .	3-27	217	224	Weston, .	2-84
156	176	Goshen, .	3-27	214	225	Ipswich, .	2-83
157	177	Hanson, .	3-27	229	226	Acton, .	2-82
311	178	W. Stockbridge, .	3-26	284	227	Halifax, .	2-82
163	179	Dighton, .	3-22	226	228	Hardwick, .	2-82
193	180	Lunenburg, .	3-21	216	229	Middlefield, .	2-82
212	181	Mansfield, .	3-21	147	230	West Roxbury, .	2-82
164	182	Tisbury, .	3-21	208	231	Bedford, .	2-80
150	183	Uxbridge, .	3-21	239	232	Lincoln, .	2-80
210	184	Concord, .	3-19	219	233	Peru, .	2-79
171	185	W. Bridgewater, .	3-17	221	234	Yarmouth, .	2-78
134	186	Holden, .	3-16	185	235	Petersham, .	2-76
191	187	Boxborough, .	3-15	223	236	Washington, .	2-76
189	188	Revere, .	3-14	282	237	Williamsburg, .	2-76
177	189	Coleraine, .	3-13	151	238	Wales, .	2-75
166	190	Newburyport, .	3-13	224	239	Essex, .	2-74
259	191	Hinsdale, .	3-12	225	240	Monterey, .	2-74
203	192	Pembroke, .	3-12	253	241	Swansea, .	2-73
181	193	Phillipston, .	3-12	254	242	Dover, .	2-72
265	194	Ashfield, .	3-11	195	243	Hingham, .	2-71
213	195	Buckland, .	3-10	267	244	Dracut, .	2-70
211	196	West Newbury, .	3-10	250	245	Burlington, .	2-69
144	197	Fairhaven, .	3-09	273	246	Littleton, .	2-69
201	198	Westport, .	3-09	233	247	Marshfield, .	2-66
227	199	Longneadow, .	3-08	234	248	Paxton, .	2-69
222	200	Rutland, .	3-07	235	249	Chesterfield, .	2-68
218	201	Sutton, .	3-07	251	250	Cheshire, .	2-67
197	202	Salem, .	3-06	293	251	Sudbury, .	2-66
186	203	Acushnet, .	3-05	111	252	Ludlow, .	2-64
268	204	Holland, .	3-05	242	253	Windsor, .	2-64
188	205	Monson, .	3-04	266	254	New Bedford, .	2-63
143	206	Pittsfield, .	3-04	256	255	Westford, .	2-62
261	207	Salisbury, .	3-04	142	256	Stow, .	2-61
290	208	Shelburne, .	3-04	245	257	Hadley, .	2-58
180	209	Wayland, .	3-04	249	258	Harvard, .	2-57
305	210	Lanesborough, .	3-03	246	259	Boylston, .	2-56
190	211	Tyngsborough, .	3-02	252	260	Sturbridge, .	2-54

For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
295	261	Tewksbury, .	\$ 002-54	820	301	Egremont, .	\$ 002-11
207	262	Shrewsbury, .	2-53	297	302	Royalston, .	2-11
258	263	Brewster, .	2-50	299	303	Hamilton, .	2-08
255	264	Brimfield, .	2-50	278	304	Blandford, .	2-07
257	265	Berlin, .	2-49	808	305	Dunstable, .	2-05
236	266	Mendon, .	2-47	263	306	Boxford, .	1-99
808	267	Enfield, .	2-46	260	307	Duxbury, .	1-99
237	268	Sharon, .	2-45	307	308	Lynnfield, .	1-98
279	269	Worthington, .	2-44	809	309	Medfield, .	1-96
300	270	North Reading, .	2-42	822	310	Whately, .	1-95
269	271	Seekonk, .	2-42	824	311	Chelmsford, .	1-94
302	272	Carlisle, .	2-40	270	312	Edgartown, .	1-93
280	273	Billerica, .	2-39	317	313	Wilmington, .	1-91
175	274	Carver, .	2-39	313	314	New Ashford, .	1-89
306	275	Auburn, .	2-38	275	315	Bolton, .	1-88
248	276	South Scituate, .	2-38	325	316	Raynham, .	1-88
274	277	Norton, .	2-37	319	317	W. Brookfield, .	1-87
202	278	Ashby, .	2-36	312	318	Dartmouth, .	1-85
285	279	Brookline, .	2-35	281	319	Sterling, .	1-84
206	280	Rowley, .	2-35	314	320	Newbury, .	1-82
276	281	Milton, .	2-34	315	321	Gill, .	1-79
277	282	Tyringham, .	2-34	328	322	Belmont, .	1-75
204	283	Savoy, .	2-33	318	323	Hatfield, .	1-73
238	284	Hull, .	2-32	323	324	Pepperell, .	1-67
287	285	Kingston, .	2-30	262	325	Southwick, .	1-64
301	286	Sherborn, .	2-30	326	326	Richmond, .	1-59
304	287	Dalton, .	2-27	327	327	Chilmark, .	1-57
292	288	Princeton, .	2-27	331	328	Bernardston, .	1-55
298	289	Agawam, .	2-26	329	329	Hancock, .	1-43
294	290	Barre, .	2-25	333	330	Gosnold, .	1-10
286	291	Mattapoissett, .	2-22	332	-	Alford, .	0-95
289	292	Rochester, .	2-19	12	-	Chelsea,*	-
296	293	Boston, .	2-18			Ayer,†	-
291	294	Falmouth, .	2-18			Everett,†	-
215	295	Marion, .	2-18			Gay Head,†	-
330	296	Topsfield, .	2-18			Hudson,†	-
316	297	Leyden, .	2-15			Hyde Park,†	-
248	298	Freetown, .	2-12			Mashpee,†	-
288	299	Sandisfield, .	2-12			Maynard,†	-
321	300	Tolland, .	2-12			Norfolk,†	-

* Chelsea made no returns in 1871.

† New towns—separate valuation not given.

GRADUATED TABLES—SECOND SERIES.

[COUNTY TABLES.]

In which all the Towns in the respective Counties in the State are numerically arranged, according to the percentage of their taxable property, appropriated for the support of Public Schools, for the year 1870-71.

BARNSTABLE COUNTY.

For 1869-70.	For 1870-71.		mills.	For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
1	1	WELLFLEET, .	\$.007-14	9	8	Sandwich, .	\$.003-81
2	2	Eastham, .	4-55	10	9	Chatham, .	3-63
6	3	Provincetown, .	4-44	3	10	Barnstable, .	3-53
8	4	Harwich, .	4-39	11	11	Yarmouth, .	2-78
4	5	Dennis, .	4-23	12	12	Brewster, .	2-59
5	6	Truro, .	4-22	13	13	Falmouth, .	2-16
7	7	Orleans, .	3-94	—	14	Mashpee, .	—

BERKSHIRE COUNTY.

2	1	ADAMS, .	\$.005-97	15	17	Stockbridge, .	\$.002-04
1	2	Florida, .	5-24	12	18	Pern, .	2-79
18	3	Otis, .	4-06	13	19	Washington, .	2-76
3	4	Williamstown, .	3-88	14	20	Monterey, .	2-74
17	5	Sheffield, .	3-87	19	21	Cheshire, .	2-67
4	6	Becket, .	3-76	10	22	Windsor, .	2-64
5	7	Clarksburg, .	3-75	21	23	Tyringham, .	2-34
6	8	Gt. Barrington, .	3-67	11	24	Savoy, .	2-33
7	9	Lenox, .	3-63	24	25	Dalton, .	2-27
10	10	N. Marlborough, .	3-60	22	26	Sandisfield, .	2-12
9	11	Lee, .	3-42	28	27	Egremont, .	2-11
22	12	Mt. Washington, .	3-42	27	28	New Ashford, .	1-89
26	13	W. Stockbridge, .	3-26	29	29	Richmond, .	1-59
20	14	Hinsdale, .	3-12	30	30	Hancock, .	1-43
8	15	Pittsfield, .	3-04	31	31	Alford, .	0-95
25	16	Lanesborough, .	3-03				

BRISTOL COUNTY.

For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
1	1	ATTLEBORO', .	\$.004-77	8	11	Acushnet, .	\$.003-05
7	2	Berkley, .	3-97	17	12	Somerset, .	2-92
5	3	Rehoboth, .	3-66	13	13	Swansea, .	2-73
2	4	Fall River, .	3-65	14	14	New Bedford, .	2-63
4	5	Taunton, .	3 55	15	15	Seekonk, .	2-42
11	6	Easton, .	3-31	16	16	Norton, .	2-37
6	7	Dighton, .	3-22	12	17	Freetown, .	2 12
10	8	Mansfield, .	3-21	19	18	Raynham, .	1-88
3	9	Fairhaven, .	3 09	18	19	Dartmouth, .	1-85
9	10	Westport, .	3-09				

DUKES COUNTY.

1	1	TISBURY, .	\$.003-21	4	4	Gosnold, .	\$.001.10
2	2	Edgartown, .	1-93	-	5	Gay Head, .	-
3	3	Chilmark, .	1-57				

ESSEX COUNTY.

2	1	GLOUCESTER, .	\$.006-48	17	18	Wenham, .	\$.003-45
1	2	Haverhill, .	5-91	20	19	Nahant, .	3-29
3	3	Lynn, .	5-41	19	20	North Andover, .	3-28
8	4	Bradford, .	5-40	18	21	Newburyport, .	3-13
4	5	Marblehead, .	5-16	24	22	West Newbury, .	3-10
10	6	Georgetown, .	5-13	21	23	Salem, .	3-06
6	7	Peabody, .	4-97	29	24	Salisbury, .	3-04
7	8	Danvers, .	4-42	23	25	Saugus, .	2-98
14	9	Methuen, .	4-41	28	26	Groveland, .	2-97
16	10	Middleton, .	4-38	25	27	Ipswich, .	2-83
12	11	Lawrence, .	4-09	27	28	Essex, .	2-74
9	12	Rockport, .	3-96	22	29	Rowley, .	2-35
15	13	Amesbury, .	3-93	34	30	Topsfield, .	2-18
11	14	Swampscott, .	3-80	31	31	Hamilton, .	2-08
13	15	Manchester, .	3-65	30	32	Boxford, .	1-99
5	16	Beverly, .	3-57	32	33	Lynnfield, .	1-98
26	17	Andover, .	3-54	33	34	Newbury, .	1-82

FRANKLIN COUNTY.

2	1	ERVING, .	\$.006-08	1	4	Hawley, .	\$.004-93
3	2	Warwick, .	5-69	5	5	Shutesbury, .	4-56
18	3	Heath, .	5-47	6	6	New Salem, .	4-46

FRANKLIN COUNTY—CONTINUED.

For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
4	7	Rowe, . . .	\$.004-43	16	17	Monroe, . . .	\$.003-30
7	8	Orange, . . .	4-17	20	18	Charlemont, . . .	3-27
12	9	Montague, . . .	4-12	17	19	Coleraine, . . .	3-13
10	10	Deerfield, . . .	4-06	21	20	Ashfield, . . .	3-11
9	11	Wendell, . . .	3-96	19	21	Buckland, . . .	3-10
11	12	Greenfield, . . .	3-84	22	22	Shelburne, . . .	3-04
13	13	Sunderland, . . .	3-62	24	23	Leyden, . . .	2-15
8	14	Conway, . . .	3-55	25	24	Whately, . . .	1-95
15	15	Leverett, . . .	3-51	23	25	Gill, . . .	1-79
14	16	Northfield, . . .	3-51	26	26	Bernardston, . . .	1-55

HAMPDEN COUNTY.

1	1	HOLYOKE, . . .	\$.007-25	17	12	Holland, . . .	\$.003-05
2	2	Chicopee, . . .	5-88	12	13	Monson, . . .	3-04
5	3	Westfield, . . .	5-08	18	14	Wilbraham, . . .	2-87
3	4	Springfield, . . .	5-06	8	15	Wales, . . .	2-75
11	5	Russell, . . .	4-70	6	16	Ludlow, . . .	2-64
4	6	Montgomery, . . .	4-67	15	17	Brimfield, . . .	2-50
14	7	W. Springfield, . . .	4-55	20	18	Agawam, . . .	2-28
7	8	Chester, . . .	4-49	21	19	Tolland, . . .	2-12
10	9	Palmer, . . .	3-99	19	20	Blandford, . . .	2-07
9	10	Granville, . . .	3-71	16	21	Southwick, . . .	1-64
13	11	Longmeadow, . . .	3-08				

HAMPSHIRE COUNTY.

3	1	WARE, . . .	\$.005-49	12	13	Cummington, . . .	\$.003-50
1	2	Pelham, . . .	5-06	13	14	Huntington, . . .	3-42
9	3	Northampton, . . .	5-03	14	15	Goshen, . . .	3-27
2	4	Westhampton, . . .	4-98	16	16	Plainfield, . . .	2-93
4	5	South Hadley, . . .	4-67	17	17	Middlefield, . . .	2-82
7	6	Belchertown, . . .	4-51	21	18	Williamsburg, . . .	2-76
8	7	Amherst, . . .	4-31	18	19	Chesterfield, . . .	2-63
6	8	Prescott, . . .	4-22	19	20	Hadley, . . .	2-53
5	9	Granby, . . .	4-09	22	21	Enfield, . . .	2-46
10	10	Greenwich, . . .	3-82	20	21	Worthington, . . .	2-44
11	11	Southampton, . . .	3-68	23	23	Hatfield, . . .	1-73
15	12	Easthampton, . . .	3-53				

MIDDLESEX COUNTY.

For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	For 1869-70.	For 1870-71.	TOWNS.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.
1	1	SOMERVILLE,	\$.008-17	28	29	Wayland,	\$.003-04
4	2	Stoneham,	6-56	29	30	Tyngsborough,	3-02
10	3	Natick, .	6-46	31	31	Shirley, .	2-96
6	4	Ashland, .	6-32	35	32	Weston, .	2-84
3	5	Marlborough,	6-32	36	33	Acton, .	2-82
7	6	Winchester,	6-18	33	34	Bedford, .	2-80
9	7	Hopkinton,	5-64	37	35	Lincoln, .	2-80
8	8	Newton, .	5-51	40	36	Dracut, .	2-70
15	9	Reading, .	5-41	38	37	Burlington,	2-69
12	10	Watertown,	5-08	41	38	Littleton, .	2-69
11	11	Charlestown,	4-92	43	39	Sudbury, .	2-66
5	12	Melrose, .	4-81	39	40	Westford,	2-62
2	13	Malden, .	4-70	26	41	Stow, .	2-61
20	14	Waltham,	4-55	44	42	Tewksbury,	2-54
13	15	Brighton,	4-51	45	43	North Reading,	2-42
17	16	Framingham,	4-43	47	44	Carlisle, .	2-40
21	17	Cambridge,	4-28	42	45	Billerica, .	2-39
16	18	Wakefield,	4-22	32	46	Ashby, .	2-36
18	19	Lowell, .	4-19	46	47	Sherborn,	2-30
19	20	Townsend,	4-07	48	48	Dunstable,	2-05
14	21	Arlington,	4-04	51	49	Chelmsford,	1-94
25	22	Lexington,	4-01	49	50	Wilmington,	1-91
22	23	Holliston,	3-99	52	51	Belmont, .	1-75
27	24	Woburn, .	3-87	50	52	Pepperell,	1-67
24	25	Groton, .	3-86	53	53	Everett, .	-
23	26	Medford, .	3-59	54	54	Hudson, .	-
34	27	Concord, .	3-19	-	55	Ayer, .	-
30	28	Boxborough,	3-15	-	56	Maynard,	-

NANTUCKET COUNTY.

		NANTUCKET,	\$.003-71
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NORFOLK COUNTY.

4	1	WEYMOUTH, .	\$.005-98	13	13	Randolph, .	\$.003-42
1	2	Needham, .	5-56	17	14	Cohasset, .	3-40
2	3	Bellingham,	4-61	12	15	Wrentham,	2-99
3	4	Stoughton,	4-59	14	16	West Roxbury,	2-82
5	5	Quincy, .	4-58	19	17	Dover, .	2-72
7	6	Medway, .	4-39	18	18	Sharon, .	2-45
16	7	Walpole, .	3-97	21	19	Brookline,	2-35
11	8	Dedham, .	3-95	20	20	Milton, .	2-34
9	9	Franklin, .	3-82	22	21	Medfield, .	1-96
10	10	Braintree,	3-80	23	22	Hyde Park,	-
8	11	Foxborough,	3-65	-	23	Norfolk, .	-
15	12	Canton, .	3-62				

PLYMOUTH COUNTY.

For 1898-99.	For 1897-98.	TOWNS.	Percentage of Valuation appropriated to Public Schools and equivalent to mills and hundredths of mills.	For 1898-99.	For 1897-98.	TOWNS.	Percentage of Valuation appropriated to Public Schools and equivalent to mills and hundredths of mills.
8	1	N. BRIDGEWATER,	\$.008-45	15	14	Plympton,	\$.002-95
5	11	Plymouth,	4-81	22	18	Halifax,	2-82
1	8	Abington,	4-57	14	18	Hingham,	2-71
2	4	Wareham,	4-53	18	17	Marshfield,	2-69
4	5	E Bridgewater,	4-31	12	18	Carver,	2-39
6	6	Bridgewater,	3-91	20	19	South Scituate,	2-38
8	7	Hanover,	3-81	19	20	Hull,	2-32
7	8	Scituate,	3-40	24	21	Kingston,	2-30
10	9	Middleborough,	3-28	23	22	Mattapoisett,	2-22
9	10	Hanson,	3-27	25	23	Rochester,	2-19
11	11	W Bridgewater,	3-17	17	24	Marion,	2-18
16	12	Pembroke,	3-12	21	25	Duxbury,	1-99
13	13	Lakeville,	2-96				

SUFFOLK COUNTY.

1	1	CHELSEA,*	\$.005-53	2	3	Revere,	\$.003-14
3	2	Winthrop,	3-45	4	4	Boston,†	2-18

WORCESTER COUNTY.

1	1	WESTBORO',	\$.006-78	11	22	Brookfield,	\$.004-01
10	2	Dudley,	6-16	18	23	Oxford,	3-96
12	3	Fitchburg,	4-95	19	24	Templeton,	3-68
5	11	Worcester,	4-90	20	25	Westminster,	3-68
8	5	Milford,	4-89	32	26	Grafton,	3-62
3	6	Northbridge,	4-88	22	27	Ashburnham,	3-60
17	7	N. Brookfield,	4-83	25	28	Upton,	3-55
16	8	Southborough,	4-70	31	29	Spencer,	3-55
6	9	Warren,	4-59	28	30	Leominster,	3-41
7	10	Webster,	4-53	34	31	Blackstone,	3-38
4	11	West Boylston,	4-42	27	32	Hubbardston,	3-37
9	12	Southbridge,	4-36	39	33	Northborough,	3-34
11	13	Millbury,	4-31	33	34	Charlton,	3-30
21	14	Winchendon,	4-30	38	35	Lunenburg,	3-21
24	15	Athol,	4-21	29	36	Uxbridge,	3-21
15	16	Gardner,	4-20	25	37	Holden,	3-16
51	17	Lancaster,	4-18	35	38	Phillipston,	3-12
23	18	Clinton,	4-14	42	39	Rutland,	3-07
30	19	Dana,	4-13	41	40	Sutton,	3-07
2	20	Oakham,	4-09	36	41	Leicester,	3-03
13	21	Douglas,	4-02	44	42	New Braintree,	2-84

* Return of last year.

† Including Roxbury and Dorchester.

1872.]

PUBLIC DOCUMENT—No. 2.

xc

WORCESTER COUNTY—Continued.

A GRADUATED TABLE—SECOND SERIES.

The different Counties in the State numerically arranged, according to the Percentage of their Taxable Property, appropriated for the support of Public Schools, for the year 1870-71.

For 1869-70	For 1870-71	COUNTIES.	Percentage of Valuation appropriated to Public Schools—equivalent to mills and hundredths of mills.	Amount of money raised by taxes for the support of Public Schools.	Income of Surplus Revenue and of similar funds appropriated for Public Schools.	TOTAL.	Valuation of 1868.	Amount contributed for board and fuel.
1	1	HAMPDEN,	\$.004-70	\$155,184 28	\$1,095 69	\$156,279 97	\$33,253,177 00	\$1,281 21
2	2	Middlesex,	4-43	687,318 69	376 08	687,694 77	155,324,723 00	369 00
3	3	Essex, .	4-03	363,347 53	1,349 40	364,696 93	90,393,467 00	865 80
4	4	Worcester,	4-01	323,019 34	1,000 63	324,019 97	80,857,766 00	244 00
5	5	Hampshire,	3-94	80,205 00	641 96	80,846 96	20,510,994 00	2,597 00
6	6	Barnstable,	3-78	53,950 00	25 22	53,975 22	14,276,198 00	305 00
7	7	Nantucket,	3-72	8,000 00	-	8,000 00	2,152,568 00	-
12	8	Norfolk, .	3-69	216,377 54	894 97	217,272 51	58,767,980 00	710 00
7	9	Plymouth,	3-68	102,673 64	74 50	102,748 14	27,932,058 00	1,140 00
9	10	Franklin,	3-52	45,730 00	254 30	45,984 30	13,048,120 00	1,872 19
10	11	Berkshire,	3-42	95,118 24	458 84	95,577 08	27,937,444 00	2,879 06
11	12	Bristol, .	3-09	183,831 07	69 09	183,900 16	59,464,668 00	277 00
14	13	Suffolk, .	2-25	952,705 00	-	952,705 00	423,606,514 00	-
13	14	Dukes, .	2-23	4,875 00	-	4,875 00	2,183,975 00	-

AGGREGATE FOR THE STATE.

14 Counties,	\$.008-25	\$3,272,335 33	\$6,240 68	\$8,278,576 01	\$1,009,709,652 00	\$12,540 26
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*Arrangement of the Counties according to their Appropriations,
including Voluntary Contributions.*

If the Counties are numerically arranged, according to the percentage of their valuations appropriated for Public Schools, voluntary contributions of board and fuel being added to the sum raised by tax and to the income of the Surplus Revenue, as severally given in the previous Table, the order of precedence will be as follows :—

For 1869-70.	For 1870-71.	COUNTIES.	Percentage of Valuation equivalent to mills and hundredths of mills.
1	1	HAMPDEN,	3.004-74
2	2	Middlesex,	4-43
6	3	Hampshire,	4-07
3	4	Essex,	4-04
5	5	Worcester,	4-01
4	6	Barnstable,	3-80
7	7	Nantucket,	3-72
8	8	Plymouth,	3-72
12	9	Norfolk,	3-71
9	10	Franklin,	3-67
10	11	Berkshire,	3-52
11	12	Bristol,	3-09
14	13	Suffolk,	2-25
13	14	Dukes,	2-23
Aggregate for the State,			3.003-26

GRADUATED TABLES—THIRD SERIES.

The following Table exhibits the ratio of the average attendance for the year in each town to the whole number of children between 5 and 15, according to the returns.

The ratio is expressed in decimals, continued to four figures, the first two of which are separated from the last two by a point, as only the two former are essential to denote the real per cent. Yet the ratios of many towns are so nearly equal, or the difference is so small a fraction, that the first two decimals, with the appropriate mathematical sign appended, indicate no distinction. The continuation of the decimals, therefore, is simply to indicate a priority in cases where, without such continuation, the ratios would appear to be precisely similar.

In several cases the ratio of attendance exhibited in the Table is over 100 per cent. These results, supposing the registers to have been properly kept, and the returns correctly made, are to be thus explained:—the average attendance upon all Public Schools, being compared with the whole number of children in the town between 5 and 15, the result may be over 100 per cent., because the attendance of children under 5 and over 15 may more than compensate for the absence of children between those ages. The rank of the towns standing highest in the following table is in accordance with the returns. As the returns are often incorrect the rank may be too high in some cases.

GRADUATED TABLES — THIRD SERIES.

[FOR THE STATE.]

Table in which all the Towns in the State are numerically arranged according to the AVERAGE ATTENDANCE of their children upon the Public Schools, for the year 1870-71.

	TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of children between 5 and 15, expressed in decimals.		TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of children between 5 and 15, expressed in decimals.
1	WELLFLEET,	424	468	1.10-88	34	Kingston, .	289	262	.90-66
2	Sherborn, .	209	221	1 05-74	35	Phillipston, .	159	144	.90-56
3	Heath, .	110	116	1 05-45	36	Westhampton,	137	124	.90-51
4	Boxborough, .	69	72	1.04-35	37	Gay Head, .	40	36	.90-00
5	Charlton, .	301	313	1.03-99	38	Lancaster, .	320	288	.90-00
6	Brighton, .	847	872	1 02-95	39	Amherst, .	661	592	.89-56
7	Westminster,	288	293	1 01-74	40	Harwich, .	810	725	.89-51
8	Burlington, .	103	104	1 00-97	41	Clarksburg, .	141	126	.89-36
9	Eastham, .	118	118	1.00-00	42	Acton, .	304	271	.89-14
10	Warwick, .	124	124	1.00-00	43	Leominster, .	607	541	.89-13
11	New Salem, .	158	157	.99-37	44	Weston, .	196	174	.88-78
12	Orleans, .	239	237	.99-16	45	Belmont, .	273	242	.88-64
13	Paxton, .	120	119	.99-16	46	Framingham,	744	659	.88-57
14	Andover, .	688	672	.97-67	47	Lexington, .	330	292	.88-48
15	Sterling, .	298	291	.97-65	48	Reading, .	547	483	.88-30
16	Middleton, .	233	227	.97-42	49	Royalston, .	243	214	.88-07
17	Oakham, .	154	148	.96-10	50	Barre, .	426	375	.88-03
18	Upton, .	354	336	.94-91	51	Ashburnham,	405	356	.87-90
19	Granville, .	229	217	.94-76	52	Provincetown,	737	647	.87-79
20	Lunenburg, .	208	197	.94-71	53	Belchertown,	450	395	.87-78
21	Sandwich, .	735	695	.94-56	54	Carlisle, .	115	100	.86-96
22	Shutesbury, .	109	103	.94-49	55	Hawley, .	130	113	.86-92
23	Milton, .	466	438	.94-00	56	Shrewsbury, .	285	246	.86-32
24	Bolton, .	176	165	.93-75	57	Brimfield, .	218	188	.86-24
25	Lenox, .	276	256	.92-75	58	Princeton, .	237	204	.86-08
26	Peru, .	99	91	.91-92	59	Littleton, .	204	175	.85-78
27	Medway, .	600	550	.91-67	60	Greenwich, .	103	88	.85-43
28	Hubbardston,	281	257	.91-46	61	Marshfield, .	295	252	.85-42
29	Somerville, .	2,570	2,348	.91-36	62	Holden, .	362	309	.85-36
30	Templeton, .	492	449	.91-26	63	Sturbridge, .	314	268	.85-35
31	Lynnfield, .	124	113	.91-13	64	Haverhill, .	2,166	1,847	.85-27
32	Granby, .	157	143	.91-08	65	Berkley, .	148	126	.85-14
33	Waltham, .	1,420	1,291	.90-91	66	Coleraine, .	313	266	.84-98

	TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.		TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.
67	Wareham, .	625	111	.84-96	115	Gloucester, .	8,118	2,465	.79-11
68	Wilmington, .	151	128	.84-77	116	Everett, .	432	341	.78-93
69	Harvard, .	280	238	.84-80	117	W Sp'ngfield, .	431	340	.78-89
70	Leverett, .	146	128	.84-25	118	Weymouth, .	1,908	1,498	.78-72
71	E Bridgew'r, .	579	487	.84-11	119	Barnstable, .	885	696	.78-84
72	Enfield, .	151	127	.84-11	120	Hyde Park, .	950	746	.78-53
73	Plainfield, .	94	79	.84-04	121	Leicester, .	1,160	861	.78-48
74	Melrose, .	642	539	.83-95	122	Ashland, .	394	309	.78-43
75	Huntington, .	224	188	.83-93	123	Dighton, .	298	232	.78-38
76	Chelmsford, .	461	385	.83-1	124	Prescott, .	92	72	.78-26
77	Wales, .	111	112	.83-6	125	Dana, .	151	118	.78-15
78	Newton, .	2,386	1,978	.83-4	126	Monterey, .	151	118	.78-15
79	Marion, .	192	159	.83-1	127	Erving, .	105	82	.78-09
80	Whately, .	117	138	.83-3	128	Needham, .	689	538	.78-08
81	Chester, .	241	119	.83-7	129	Dalton, .	241	188	.78-01
82	Georgetown, .	416	342	.83-1	130	Deerfield, .	602	469	.77-91
83	Gardner, .	648	522	.83-0	131	Stoughton, .	1,128	878	.77-84
84	Ashby, .	200	164	.83-0	132	Malden, .	1,417	1,102	.77-77
85	Lakeville, .	205	168	.83-5	133	Easton, .	780	606	.77-70
86	Wenham, .	106	136	.83-3	134	Hamilton, .	111	101	.77-69
87	Mattapoisett, .	276	226	.81-86	135	Danstable, .	85	66	.77-65
88	Ashfield, .	214	174	.81-32	136	Russell, .	136	105	.77-21
89	Tyngsboro', .	107	87	.81-31	137	Charlemont, .	193	149	.77-20
90	Sunderland, .	165	134	.81-21	138	Hardwick, .	385	297	.77-14
91	Brookfield, .	433	351	.81-06	139	Stoneham, .	711	609	.77-08
92	Bellingham, .	216	175	.81-02	140	W. Newbury, .	431	332	.77-03
93	Otis, .	198	100	.80-91	141	Hanover, .	322	248	.77-02
94	Conway, .	271	219	.80-81	142	Holliston, .	665	512	.76-99
95	Petersham, .	238	192	.80-67	143	Edgartown, .	323	248	.76-60
96	Medford, .	1,117	901	.80-66	144	Nantucket, .	655	503	.76-80
97	Springfield, .	4,232	3,407	.80-51	145	Mendon, .	241	185	.76-76
98	Westfield, .	1,131	910	.80-46	146	Blackstone, .	1,042	799	.76-66
99	Carver, .	194	150	.80-41	147	N. Bedford, .	8,777	2,895	.76-55
100	Townsend, .	872	299	.80-38	148	Woburn, .	1,844	1,412	.76-57
101	Hopkinton, .	1,076	804	.80-29	149	W. Boylston, .	550	421	.76-55
102	W. Roxbury, .	1,630	1,306	.80-12	150	N. Reading, .	178	136	.76-49
103	Franklin, .	507	406	.80-08	151	W. B'dgw'ter, .	377	288	.76-39
104	Chilmark, .	105	84	.80-00	152	Seekonk, .	182	139	.76-37
105	Athol, .	579	400	.79-97	153	Worcester, .	7,519	5,732	.76-23
106	Hadley, .	426	340	.79-81	154	Tisbury, .	315	240	.76-19
107	Yarmouth, .	371	296	.79-78	155	S. Hadley, .	583	406	.76-17
108	Wendell, .	79	68	.79-75	156	Hudson, .	677	515	.76-07
109	Lincoln, .	148	118	.79-73	157	Chesterfield, .	154	117	.75-97
110	Brookline, .	1,108	878	.79-60	158	Dedham, .	1,419	1,077	.75-91
111	Bridgewater, .	676	538	.79-58	159	Rockport, .	817	619	.75-76
112	Gill, .	122	97	.79-51	160	Leyden, .	111	87	.75-63
113	Rehoboth, .	830	604	.79-39	161	Fitchburg, .	2,105	1,589	.75-49
114	Swampscott, .	845	278	.79-18	162	Winchester, .	592	446	.75-34

	TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals		TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals
163	Bedford, .	162	122	.75-31	211	Boston, .	46301	33303	.71-93
164	Concord, .	421	317	.75-29	212	Lowell, .	6,437	4,617	.71-73
165	Dennis, .	752	566	.75-27	213	Hanson, .	208	149	.71-63
166	Arlington, .	675	508	.75-26	214	Duxbury, .	417	298	.71-46
167	Marblehead, .	1,445	1,086	.75-16	215	Holland, .	84	60	.71-43
168	Raynham, .	334	251	.75-15	216	Westport, .	548	391	.71-35
169	Bernardston, .	156	117	.75-00	217	Groton, .	749	534	.71-29
170	Rutland, .	240	180	.75-00	218	Savoy, .	181	129	.71-27
171	Charlestown, .	6,081	4,557	.74-94	219	Milford, .	2,396	1,706	.71-20
172	Douglas, .	415	311	.74-94	220	Revere, .	191	136	.71-20
173	Northampton, .	1,943	1,456	.74-93	221	Plymouth, .	1,142	934	.71-18
174	Longmeadow, .	267	200	.74-91	222	Worthington, .	197	140	.71-07
175	Auburn, .	223	167	.74-89	223	Warren, .	490	348	.71-02
176	Tyringham, .	119	89	.74-79	224	Peabody, .	1,440	1,022	.70-98
177	Abington, .	2,135	1,596	.74-75	225	Sutton, .	534	379	.70-97
178	Manchester, .	298	222	.74-50	226	Winthrop, .	124	88	.70-97
179	Ware, .	857	638	.74-45	227	Foxborough, .	543	385	.70-90
180	N. Braintree, .	133	99	.74-43	228	W. Br'kfield, .	371	263	.70-89
181	Walpole, .	395	294	.74-43	229	Sudbury, .	379	268	.70-71
182	Brewster, .	264	196	.74-24	230	Wakefield, .	737	520	.70-56
183	Stockbridge, .	383	284	.74-15	231	N. B'dgw'ter, .	1,589	1,121	.70-55
184	Freetown, .	270	200	.74-07	232	Buckland, .	399	281	.70-43
185	Fairhaven, .	515	381	.73-98	233	Essex, .	372	262	.70-43
186	Natick, .	1,428	1,053	.73-74	234	Sandisfield, .	290	204	.70-34
187	Scituate, .	467	344	.73-66	235	Northboro', .	283	119	.70-32
188	Plympton, .	170	125	.73-53	236	Hinsdale, .	326	229	.70-25
189	Shirley, .	306	225	.73-53	237	S Scituate, .	291	203	.69-76
190	Northfield, .	380	279	.73-42	238	Truro, .	327	228	.69-72
191	Wayland, .	237	174	.73-42	239	Nahant, .	95	66	.69-47
192	Boylston, .	154	113	.73-38	240	Chatham, .	543	377	.69-43
193	Monson, .	542	397	.73-24	241	Clinton, .	1,069	742	.69-41
194	Swansea, .	254	186	.73-23	242	Danvers, .	1,198	831	.69-36
195	Quincy, .	1,536	1,120	.72-92	243	Cheshire, .	362	251	.69-34
196	Ipswich, .	572	417	.72-90	244	Westboro', .	681	471	.69-16
197	Goshen, .	70	51	.72-86	245	N. Andover, .	516	356	.68-99
198	Dracut, .	383	279	.72-84	246	Topsfield, .	237	163	.68-78
199	Orange, .	397	289	.72-79	247	Adams, .	2,152	1,478	.68-68
200	Boxford, .	165	121	.72-73	248	Dartmouth, .	640	439	.68-59
201	Middlefield, .	172	125	.72-67	249	Williamsbu'g, .	528	362	.68-56
202	Spencer, .	809	589	.72-56	250	Falmouth, .	406	278	.68-47
203	Amesbury, .	958	693	.72-34	251	Monroe, .	41	28	.68-29
204	Cummington, .	220	159	.72-27	252	Saugus, .	466	318	.68-24
205	Beverly, .	1,271	917	.72-15	253	Richmond, .	214	146	.68-22
206	Methuen, .	527	380	.72-11	254	Lee, .	918	626	.68-19
207	Pembroke, .	276	199	.72-10	255	Newbury, .	216	147	.68-06
208	Oxford, .	548	395	.72-08	256	Wrentham, .	429	292	.68-06
209	Bradford, .	397	286	.72-04	257	Mansfield, .	464	315	.67-90
210	Halifax, .	118	85	.72-03	258	Norton, .	299	203	.67-90

	TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.		TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.
259	Northbridge, .	802	544	.67-83	300	Salisbury, .	742	460	.61-99
260	Tewksbury, .	242	164	.67-77	301	Westford, .	368	228	.61-96
261	Southboro', .	464	314	.67-67	302	Tolland, .	115	71	.61-74
262	Watertown, .	876	591	.67-48	303	Lynn, .	5,904	3,626	.61-42
263	Wilbraham, .	418	282	.67-46	304	Groveland, .	336	206	.61-31
264	Uxbridge, .	648	437	.67-44	305	Hingham, .	784	480	.61-22
265	Mashpee, .	58	39	.67-24	306	Gt Barr'gt'n, .	904	553	.61-17
266	Cohasset, .	456	306	.67-11	307	Hatfield, .	376	230	.61-17
267	Grafton, .	945	633	.66-98	308	Stow, .	387	236	.60-93
268	Taunton, .	3,471	2,315	.66-70	309	Berlin, .	219	133	.60-73
269	Pepperell, .	360	240	.66-67	310	Sharon, .	297	180	.60-61
270	Southwick, .	243	162	.66-67	311	Somerset, .	896	240	.60-61
271	Cambridge, .	8,086	5,388	.66-63	312	Florida, .	189	114	.60-32
272	Attleboro', .	1,212	807	.66-58	313	Marlborough, .	1,877	1,128	.60-19
273	Ludlow, .	233	155	.66-52	314	W. St'kbr'ge, .	412	247	.59-35
274	Becket, .	330	218	.66-06	315	Lanesboro', .	316	189	.59-31
275	Pelham, .	129	85	.65-89	316	New Ashford, .	52	31	.59-61
276	N. Marlboro', .	378	249	.65-87	317	Millbury, .	970	577	.59-45
277	Hull, .	41	27	.65-85	318	Norfolk, .	222	132	.59-45
278	Rowe, .	137	90	.65-70	319	Mt Wash'gt'n, .	74	44	.59-45
279	Montague, .	431	283	.65-66	320	Winchendon, .	620	368	.59-35
280	Windsor, .	144	94	.65-27	321	Palmer, .	776	459	.59-15
281	Montgomery, .	69	45	.65-22	322	N. Brookfield, .	786	456	.58-02
282	Medfield, .	221	144	.65-16	323	Acushnet, .	236	136	.57-42
283	Billerica, .	355	230	.64-79	324	Rochester, .	188	108	.57-43
284	Southampton, .	223	144	.64-57	325	Randolph, .	1,386	792	.57-14
285	Sheffield, .	486	313	.64-40	326	Southbridge, .	1,161	649	.55-90
286	Newburyport, .	2,452	1,578	.64-36	327	Pittsfield, .	2,517	1,390	.55-22
287	Greenfield, .	653	420	.64-32	328	Easthampton, .	768	422	.54-05
288	Hancock, .	151	97	.64-24	329	Lawrence, .	4,846	2,659	.54-57
289	Agawam, .	359	230	.64-07	330	Dudley, .	598	326	.54-32
290	Washington, .	167	107	.64-07	331	Chicopee, .	1,764	953	.54-02
291	Canton, .	935	599	.64-06	332	Webster, .	896	484	.54-02
292	Dana, .	133	85	.63-91	333	Alford, .	80	43	.53-73
293	Middleboro', .	990	631	.63-74	334	Salem, .	5,340	2,618	.49-03
294	Braintree, .	881	555	.63-00	335	Gosnold, .	19	9	.47-57
295	Egremont, .	175	110	.62-86	336	Blandford, .	224	106	.47-32
296	Williamsto'n, .	659	414	.62-82	337	Holyoke, .	1,940	863	.44-74
297	Shelburne, .	351	220	.62-68	338	Chelsea,* .	-	-	-
298	Fall River, .	5,827	3,637	.62-41	339	Ayer,† .	-	-	-
299	Rowley, .	214	133	.62-15	340	Maynard,† .	-	-	-

* No return.

† New towns—returns included in other towns.

GRADUATED TABLES—THIRD SERIES.

[COUNTY TABLES.]

Table, in which all the Towns in the respective Counties in the State are numerically arranged, according to the average attendance of their children upon the Public Schools, for the year 1870-71.

[For an explanation of the principle on which these Tables are constructed, see ante, p xciv.]

BARNSTABLE COUNTY.

TOWNS.				TOWNS.			
		No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of children between 5 and 15, expressed in decimals.			
1	WELLFLEET,	424	468	1.10-38	8	Barnstable, .	885 696 .78-64
2	Eastham, .	118	118	1.00-00	9	Dennis, .	752 566 .75-27
3	Orleans, .	239	237	.99-16	10	Brewster, .	264 196 .74-24
4	Sandwich, .	735	695	.94-56	11	Truro, .	327 228 .69-72
5	Harwich, .	810	725	.89-51	12	Chatham, .	543 377 .69-43
6	Provincet'wn,	737	647	.87-79	13	Falmouth, .	406 278 .68-47
7	Yarmouth, .	371	296	.79-78	14	Mashpee, .	58 39 .67-24

BERKSHIRE COUNTY.

1	LENOX, .	276	256	.92-75	17	N. Marlboro',	378	249	.65-87
2	Pern, .	99	91	.91-92	18	Windsor, .	144	94	.65-27
3	Clarksburg, .	141	126	.89-36	19	Sheffield, .	486	313	.64-40
4	Otis, .	198	160	.80-91	20	Hancock, .	151	97	.64-24
5	Monterey, .	151	118	.78-15	21	Washington, .	167	107	.64-07
6	Dalton, .	241	188	.76-01	22	Egremont, .	175	110	.62-86
7	Tyringham, .	119	89	.74-79	23	Williamst'wn,	659	414	.62-82
8	Stockbridge, .	383	284	.74-15	24	Gt Bar'ngton,	904	553	.61-17
9	Savoy, .	181	129	.71-27	25	Florida, .	189	114	.60-32
10	Sandisfield, .	290	204	.70-34	26	W. St'kbri'ge,	412	247	.59-95
11	Hinsdale, .	326	229	.70-25	27	Lanesboro', .	316	189	.59-81
12	Cheshire, .	362	251	.69-34	28	N. Ashford, .	52	31	.59-61
13	Adams, .	2,152	1,478	.68-68	29	Mt. Wash'gt'n,	74	44	.59-46
14	Richmond, .	214	146	.68-22	30	Pittsfield, .	2,517	1,390	.55-22
15	Lee, .	918	626	.68-19	31	Alford, .	80	43	.53-75
16	Becket, .	330	218	.66-06					

BRISTOL COUNTY.

	TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.		TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.
1	BERKLEY, .	148	126	.85-14	11	Westport, .	548	391	.71-35
2	Rehoboth, .	330	262	.79-39	12	Dartmouth, .	640	439	.68-59
3	Dighton, .	296	232	.78-38	13	Mansfield, .	464	315	.67-90
4	Easton, .	780	606	.77-70	14	Norton, .	299	203	.67-90
5	N. Bedford, .	3,777	2,895	.76-65	15	Taunton, .	3,471	2,315	.66-70
6	Seekonk, .	182	139	.76-37	16	Attleboro', .	1,212	807	.66-58
7	Raynham, .	334	251	.75-15	17	Fall River, .	5,827	3,637	.62-41
8	Freetown, .	270	200	.74-07	18	Somerset, .	896	240	.60-61
9	Fairhaven, .	515	381	.73-98	19	Acushnet, .	236	136	.57-63
10	Swansea, .	254	186	.73-23					

DUKES COUNTY.

1	GAY HEAD, .	40	36	.90-00	4	Tisbury, .	315	240	.76-19
2	Chilmark, .	105	84	.80-00	5	Gosnold, .	19	9	.47-37
3	Edgartown, .	323	248	.76-80					

ESSEX COUNTY.

1	ANDOVER, .	688	672	.97-67	18	Methuen, .	527	380	.72-11
2	Middleton, .	233	227	.97-42	19	Bradford, .	397	286	.72-04
3	Lynnfield, .	124	113	.91-13	20	Peabody, .	1,440	1,022	.70-98
4	Haverhill, .	2,166	1,847	.85-27	21	Essex, .	872	262	.70-43
5	Georgetown, .	416	342	.82-21	22	Nahant, .	95	66	.69-47
6	Wenham, .	166	136	.81-93	23	Danvers, .	1,198	831	.69-36
7	Swampscott, .	345	273	.79-13	24	N. Andover, .	516	356	.68-99
8	Gloucester, .	3,116	2,465	.79-11	25	Topsfield, .	237	163	.68-78
9	Hamilton, .	130	101	.77-69	26	Saugus, .	466	318	.68-24
10	W. Newbury, .	431	332	.77-03	27	Newbury, .	216	147	.68-06
11	Rockport, .	817	619	.75-76	28	Newburyport, .	2,452	1,578	.64-36
12	Marblehead, .	1,445	1,086	.75-16	29	Rowley, .	214	133	.62-15
13	Manchester, .	298	222	.74-50	30	Salisbury, .	742	460	.61-99
14	Ipswich, .	572	417	.72-90	31	Lynn, .	5,904	3,626	.61-42
15	Boxford, .	165	121	.72-73	32	Groveland, .	338	206	.61-31
16	Amesbury, .	958	693	.72-34	33	Lawrence, .	4,846	2,659	.54-67
17	Beverly, .	1,271	917	.72-15	34	Salem, .	5,340	2,618	.49-03

FRANKLIN COUNTY.

1	HEATH, .	110	116	1.05-45	3	New Salem, .	158	157	.99-37
2	Warwick, .	124	124	1.00-00	4	Shutesbury, .	109	103	.94-49

FRANKLIN COUNTY—CONTINUED.

	TOWNS.	No. of children between 5 and 16 years of age in each town.	Average attendance upon school.	Ratio of attendance to the whole No. of chil- dren between 5 and 16, expressed in decimals.		TOWNS.	No. of children between 5 and 16 years of age in each town.	Average attendance upon school.	Ratio of attendance to the whole No. of chil- dren between 5 and 16, expressed in decimals.
5	Hawley, .	130	113	.86-92	16	Charlemont, .	193	149	.77-20
6	Coleraine, .	313	266	.84-98	17	Leyden, .	115	87	.75-65
7	Leverett, .	146	123	.84-25	18	Bernardston, .	156	117	.75-00
8	Whately, .	167	138	.82-63	19	Northfield, .	380	279	.73-42
9	Ashfield, .	214	174	.81-32	20	Orange, .	397	289	.72-79
10	Sunderland, .	165	134	.81-21	21	Buckland, .	399	281	.70-43
11	Conway, .	271	219	.80-81	22	Monroe, .	41	28	.68-29
12	Wendell, .	79	63	.79-75	23	Rowe, .	137	90	.65-70
13	Gill, .	122	97	.79-51	24	Montague, .	431	283	.65-66
14	Erving, .	105	82	.78-09	25	Greenfield, .	653	420	.64-32
15	Deerfield, .	602	469	.77-91	26	Shelburne, .	351	220	.62-68

HAMPDEN COUNTY.

1	GRANVILLE, .	229	217	.94-76	12	Wilbraham, .	418	282	.67-46
2	Brimfield, .	218	188	.86-24	13	Southwick, .	243	162	.66-67
3	Wales, .	135	112	.82-96	14	Ludlow, .	233	155	.66-52
4	Chester, .	241	119	.82-57	15	Montgomery, .	69	45	.65-22
5	Springfield, .	4,232	3,407	.80-51	16	Agawam, .	359	230	.64-07
6	Westfield, .	1,131	910	.80-46	17	Tolland, .	115	71	.61-74
7	W. Spr'gfield, .	431	340	.78-89	18	Palmer, .	776	459	.59-15
8	Russell, .	136	105	.77-21	19	Chicopee, .	1,764	953	.54-02
9	Longmeadow, .	267	200	.74-91	20	Blandford, .	224	106	.47-32
10	Monson, .	542	397	.73-24	21	Holyoke, .	1,940	868	.44-74
11	Holland, .	84	60	.71-43					

HAMPSHIRE COUNTY.

1	GRANBY, .	157	143	.91-08	13	Northampton, .	1,943	1,456	.74-93
2	Westhampt'n, .	137	124	.90-51	14	Ware, .	857	638	.74-45
3	Amherst, .	661	592	.89-56	15	Goshen, .	70	51	.72-86
4	Belchertown, .	450	395	.87-78	16	Middlefield, .	172	125	.72-67
5	Greenwich, .	103	88	.85-43	17	Cummington, .	220	159	.72-27
6	Enfield, .	151	127	.84-11	18	Worthington, .	197	140	.71-07
7	Plainfield, .	94	79	.84-04	19	Williamsbu'g, .	528	362	.68-56
8	Huntington, .	224	188	.83-93	20	Pelham, .	129	85	.65-89
9	Hadley, .	426	340	.79-81	21	Southampton, .	223	144	.64-57
10	Prescott, .	92	72	.78-26	22	Hatfield, .	376	230	.61-17
11	S Hadley, .	533	406	.76-17	23	Easthampton, .	768	422	.54-95
12	Chesterfield, .	154	117	.75-97					

MIDDLESEX COUNTY.

	TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of children between 5 and 15, expressed in decimals.		TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of children between 5 and 15, expressed in decimals.
1	SHERBORN, .	209	221	1.05-74	28	Dunstable, .	85	66	.77-65
2	Boxborough, .	69	72	1.04-85	29	Stoneham, .	790	609	.77-98
3	Brighton, .	847	872	1.02-95	30	Holliston, .	685	512	.76-99
4	Burlington, .	103	104	1.00-97	31	Woburn, .	1,844	1,412	.76-57
5	Somerville, .	2,570	2,348	.91-86	32	No Reading, .	178	136	.76-40
6	Waltham, .	1,420	1,291	.90-91	33	Hudson, .	677	515	.76-07
7	Acton, .	304	271	.89-14	34	Winchester, .	592	446	.75-34
8	Weston, .	196	174	.88-78	35	Bedford, .	162	122	.75-31
9	Belmont, .	273	242	.88-64	36	Concord, .	421	317	.75-29
10	Framingham, .	744	659	.88-57	37	Arlington, .	675	508	.75-26
11	Lexington, .	330	292	.88-48	38	Charlestown, .	6,081	4,557	.74-94
12	Reading, .	547	483	.88-30	39	Natick, .	1,428	1,053	.73-74
13	Carlisle, .	115	100	.86-96	40	Shirley, .	306	225	.73-53
14	Littleton, .	204	175	.85-78	41	Wayland, .	237	174	.73-42
15	Wilmington, .	151	128	.84-77	42	Dracut, .	383	279	.72-84
16	Melrose, .	642	539	.83-95	43	Lowell, .	6,437	4,617	.71-73
17	Chelmsford, .	461	385	.83-51	44	Groton, .	749	534	.71-29
18	Newton, .	2,386	1,978	.82-94	45	Sudbury, .	379	268	.70-71
19	Ashby, .	200	164	.82-00	46	Wakefield, .	737	520	.70-56
20	Tyngsboro', .	107	87	.81-31	47	Tewksbury, .	242	164	.67-77
21	Medford, .	1,117	901	.80-66	48	Watertown, .	876	591	.67-48
22	Townsend, .	372	299	.80-38	49	Pepperell, .	360	240	.66-67
23	Hopkinton, .	1,076	864	.80-29	50	Cambridge, .	8,086	5,388	.66-63
24	Lincoln, .	148	118	.79-73	51	Billerica, .	355	230	.64-79
25	Everett, .	432	341	.78-93	52	Westford, .	368	228	.61-96
26	Ashland, .	394	309	.78-43	53	Stow, .	387	236	.60-93
27	Malden, .	1,417	1,102	.77-77	54	Marlborough, .	1,877	1,123	.60-10

NANTUCKET COUNTY.

NANTUCKET,	655	503	.76-80
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NORFOLK COUNTY.

1	MILTON, .	466	438	.94-00	10	Stoughton, .	1,128	878	.77-84
2	Medway, .	600	550	.91-67	11	Dedham, .	1,419	1,077	.75-90
3	Bellingham, .	216	175	.81-02	12	Walpole, .	395	294	.74-43
4	W. Roxbury, .	1,630	1,306	.80-12	13	Quincy, .	1,536	1,120	.72-92
5	Franklin, .	507	406	.80-08	14	Foxborough, .	543	385	.70-90
6	Brookline, .	1,103	878	.79-60	15	Wrentham, .	429	292	.68-06
7	Weymouth, .	1,903	1,498	.78-72	16	Cohasset, .	456	306	.67-11
8	Hyde Park, .	950	746	.78-53	17	Medfield, .	221	144	.65-16
9	Needham, .	689	538	.78-08	18	Canton, .	935	599	.64-06

NORFOLK COUNTY—CONTINUED.

	TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.		TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.
19	Dover, .	133	85	.63-91	22	Norfolk, .	222	182	.59-46
20	Braintree, .	881	555	.63-00	23	Randolph, .	1,386	792	.57-14
21	Sharon, .	297	180	.60-61					

PLYMOUTH COUNTY.

1	KINGSTON, .	289	262	.90-66	14	Plympton, .	170	125	.73-53
2	Marshfield, .	295	252	.85-42	15	Pembroke, .	276	199	.72-10
3	Wareham, .	625	581	.84-96	16	Halifax, .	118	85	.72-03
4	E. Bridgew'r, .	579	487	.84-11	17	Hanson, .	208	149	.71-63
5	Marion, .	192	159	.82-81	18	Duxbury, .	417	298	.71-46
6	Lakeville, .	205	168	.81-95	19	Plymouth, .	1,142	934	.71-18
7	Mattapoisett, .	276	226	.81-88	20	N. Bridgew'r, .	1,589	1,121	.70-55
8	Carver, .	194	156	.80-41	21	So. Scituate, .	291	203	.69-76
9	Bridgewater, .	676	598	.79-58	22	Hull, .	41	27	.65-85
10	Hanover, .	822	248	.77-02	23	Middleboro', .	990	631	.63-74
11	W. Bridgew'r, .	377	288	.76-39	24	Hingham, .	784	480	.61-22
12	Abington, .	2,135	1,596	.74-75	25	Rochester, .	188	108	.57-45
13	Scituate, .	467	344	.73-66					

SUFFOLK COUNTY.

1	BOSTON, .	46301	33303	.71-93	3	Winthrop, .	124	88	.70-97
2	Revere, .	191	136	.71-20	4	Chelsea,* .	-	-	-

WORCESTER COUNTY.

1	CHARLTON, .	301	313	1.03-99	13	Leominster, .	607	541	.89-13
2	Westminster, .	288	293	1.01-74	14	Royalston, .	243	214	.88-07
3	Paxton, .	120	119	.99-16	15	Barre, .	426	375	.88-03
4	Sterling, .	298	291	.97-65	16	Ashburnham, .	405	356	.87-90
5	Oakham, .	154	148	.96-10	17	Shrewsbury, .	285	246	.86-32
6	Upton, .	354	336	.94-91	18	Princeton, .	237	204	.86-08
7	Lunenburg, .	208	197	.94-71	19	Holden, .	362	309	.85-36
8	Bolton, .	176	165	.93-75	20	Sturbridge, .	314	268	.85-35
9	Hubbardston, .	281	257	.91-46	21	Harvard, .	280	236	.84-30
10	Templeton, .	492	449	.91-26	22	Gardner, .	646	532	.82-10
11	Phillipston, .	159	144	.90-56	23	Brookfield, .	433	351	.81-06
12	Lancaster, .	320	288	.90-00	24	Petersham, .	238	192	.80-67

* No returns.

WORCESTER COUNTY—CONTINUED.

	TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.		TOWNS.	No. of children between 5 and 15 years of age in each town.	Average attendance upon School.	Ratio of attendance to the whole No. of chil- dren between 5 and 15, expressed in decimals.
25	Athol, .	579	463	.79-97	42	Warren, .	490	348	.71-02
26	Leicester, .	460	361	.78-48	43	Sutton, .	534	379	.70-97
27	Dana, .	151	118	.78-15	44	W. Brookfield, .	371	263	.70-89
28	Hardwick, .	385	297	.77-14	45	Northborough, .	283	199	.70-32
29	Mendon, .	241	185	.76-76	46	Clinton, .	1,069	742	.69-41
30	Blackstone, .	1,042	799	.76-68	47	Westborough, .	681	471	.69-16
31	W. Boylston, .	550	421	.76-55	48	Northbridge, .	802	544	.67-83
32	Worcester, .	7,519	5,762	.76-23	49	Southborough, .	464	314	.67-67
33	Fitchburg, .	2,105	1,589	.75-49	50	Uxbridge, .	648	437	.67-44
34	Rutland, .	240	180	.75-00	51	Grafton, .	945	633	.66-98
35	Douglas, .	415	311	.74-94	52	Berlin, .	219	133	.60-73
36	Auburn, .	223	167	.74-89	53	Millbury, .	970	577	.59-48
37	New Braintree, .	133	99	.74-43	54	Winchendon, .	620	368	.59-33
38	Boylston, .	154	113	.73-38	55	N. Brookfield, .	786	456	.58-02
39	Spencer, .	809	589	.72-56	56	Southbridge, .	1,161	649	.55-90
40	Oxford, .	548	395	.72-08	57	Dudley, .	598	326	.54-52
41	Milford, .	2,396	1,706	.71-20	58	Webster, .	896	484	.54-02

TABLE, in which all the Counties are numerically arranged, according to the AVERAGE ATTENDANCE of their children upon the Public Schools, for the year 1870-71.

For 1869-70.	For 1870-71.	COUNTIES.	Ratio of attendance, &c.
6	1	Barnstable, . . . . .	.88-46
9	2	Dukes, . . . . .	.80-97
1	3	Nantucket, . . . . .	.76-79
4	4	Franklin, . . . . .	.76-15
2	5	Middlesex, . . . . .	.75-88
5	6	Plymouth, . . . . .	.74-85
3	7	Hampshire, . . . . .	.74-82
7	8	Worcester, . . . . .	.74-56
8	9	Norfolk, . . . . .	.74-11
10	10	Suffolk, . . . . .	.72-80
11	11	Bristol, . . . . .	.68-88
12	12	Hampden, . . . . .	.68-66
13	13	Essex, . . . . .	.66-50
14	14	Berkshire, . . . . .	.65-68

AVERAGE ATTENDANCE FOR THE STATE.

Number of children between 5 and 15 years of age in the State,	. 278,249
Average attendance, . . . . .	. 201,750
Ratio of attendance to the whole number of children between 5 and 15 years of age, expressed in decimals, . . . . .	.78

INDEX.

REPORTS OF THE BOARD OF EDUCATION AND OF ITS SECRETARY.

(For Index of Town School Reports, see the following pages.)

Abstracts of School Committees' Reports. (See Abstracts which follow the Report of the Secretary and the appendix to his Report.)

Academies, normal and training classes in, 8.
system in State of New York, 8.

Agent of Board, Report of, 80; services of, 81.
special agents of Board, 6; appropriation for, 34, 108; duties of, 108, 109.

American Asylum at Hartford, Report of, 58.

notice of late Principal of, 60.

terms of admission to, 65.

list of beneficiaries of Massachusetts in, 67; annual cost of supporting a pupil in, 77.

Appropriations and expenditures. (See Report of Treasurer.)

Bell, A. M., Prof., inventor of new method of instruction for deaf-mutes, 72.

Board of Education, Report of, 5.

Boston School for deaf-mutes, statement of Geo. F. Bigelow M. D., concerning, 70.

list of pupils in, 70.

system of "Visible Speech," invented by Prof. Bell, introduced into, 72.

report of a committee upon the new system, 74.

annual cost of supporting a pupil in, 77.

Bridgewater Normal School, Report of Visitors of, 22; statistics of, 22.

buildings for, 6.

teachers in, 23; enlargement of building for, 24; prosperity of, 27.

expenditures for enlargement of building of, 35; insurance of, 36.

appropriations and expenditures for, 32.

Clarke Institution for Deaf-Mutes, Report of, 40.

Report of president of, 41; endowment and funds, etc., of, 41.

statistics of, 42, 48; prosperity of, 45; financial statement of, 50.

list of pupils of, 52; order of, and terms of admission to, 54, 55.

annual cost of supporting a pupil in, 77.

Deaf-Mutes, Clarke Institution for, and Report, 39.

new system of articulation for, 43, 49, 72.

classification of, 44; U. S. Census of, 44.

Act relating to, 77; annual cost of supporting pupils in institutions for, 77.

education of, 97.

Drawing, director of Art Education appointed to teach it, 6, 9.

papers and tracts concerning, and results, 9.

models, casts, etc., to illustrate, 9, 110.

circulars, pamphlets, provisions for teaching etc., 110, 111.

paper of Walter Smith on teaching it, 134.

Education, technical, in schools, 11, 14; importance of, 12, 13.

Framingham Normal School, boarding-house for, 6.
 report of visitors of, 15; statistics of, 15.
 teachers and lecturers in, 16.
 addition to building for, and expenditures, 36.
 boarding-house for, and expenditure, 36.
 insurance of, 36.
 appropriation and expenditures for, 32.

Half-mill School Fund, 117.

Hartford Asylum for Deaf-Mutes. (See American Asylum, etc.)

High Schools, normal instruction in, 8.
 number, benefits and principals, etc., of, 88.
 "half-day system," in, 89.

Institutes for Teachers. (See Teachers' Institutes.)

Normal Schools, buildings and boarding-houses for, 6, 103.
 establishment of school at Worcester, 7.
 increase in number of, proposed, 7.
 teachers trained in, too few, 7.
 appropriations for and expenditures, 32; State aid to pupils of, 33.
 admission to, 84.
 success of, and buildings with appropriations for, 99.
 new Normal School at Worcester and Resolves respecting, 100, 101.
 appropriations, gifts and cost of buildings for, 103 *et seq.*

Phipps, Abner J., Report of, as General Agent of the Board, 80.

Report of General Agent of the Board, 80.

Report of Board of Education, 5.

Report of Secretary of the Board, 94.

Reports of School Committees. (See Abstracts.)

Report of Treasurer of the Board, 31.

Report of Visitors of Normal Schools, at,—

Framingham, 15.

Westfield, 18.

Bridgewater, 22.

Salem, 28.

Report of President of Clarke Institution for Deaf-Mutes, 41.

Report of Committee of Clarke Institution, 47.

Report of American Asylum for Deaf-Mutes, 58.

Report of Boston School for Deaf-Mutes, 70.

Salem Normal School, Report of Visitors of, 28; statistics of, 28.
 building for, enlarged, 6, 30; appropriation for enlargement of, 34.
 appropriation and expenditures for, 33.

School Fund, amount, income and appropriation of, 9.
 deficiency of, 11; State Tax to increase it, 11.
 annual report of commissioners of, 112.
 amount and investment of, 113.
 origin and history of, 115.
 demands upon, 116.
 half-mill tax for, 117.

INDEX.

cix

- School Supervision**, 5, 106.
 women elected for, 107.
 list of towns employing superintendents for, 107.
- Schools, Public**, school age for admission to, 86.
 common school studies in, 90.
 supervision of, 106.
 superintendents for, 106.
 women elected as supervisors of, and reasons for it, 107.
 list of towns employing superintendents of, 107.
- Secretary of Board of Education**, Report of, 94.
- Smith, Walter**, appointed director of Art Education, 6, 9.
 services of, 9; appointment, qualifications, salary of, as State Director of Art Education, 110, 111.
 paper of, on teaching drawing, 134.
- Special Agents**, 6, 34, 108 *et seq.*
- State Tax**, suggested, 11; half-mill, 117; (see Tax, half-mill).
- Statistics of Public Schools**, for school-year 1870-71, summary of, 94.
- State Aid**, appropriations for, 33.
- Stone, Collins, Rev.**, notice of, 60, 62, 97.
- Supervision of Public Schools**, 5.
- Tables**, graduated, of statistics. (See Appendix.)
 showing valuations of '71 and '65, increase, number of persons between 5 and 15, etc. 119 *et seq.*
- Tax, half-mill**, amount of, on valuation of 1871, etc., 125 *et seq.*
 objections to, considered, 126.
 tables concerning, 119 *et seq.*; example of other States concerning State tax, 130.
- Teachers**, supply of, from Normal Schools too small, 7.
 supply of, by normal instruction in Academies and High Schools, 8.
- Teachers' Institutes**, number and length of, 81, 97.
 attendance, and when and where held, etc., 81, 97.
 expenditures for, 34.
 teaching exercises, lectures and lecturers in, 83.
- Technical Education**, Resolve concerning, 11.
 importance of, 12, 13.
- Thompson, C. O.**, 112.
- Todd, Henry**, fund of, income and expenditure of, 34.
- Town Reports**. (See Abstracts which follow the Report of the Secretary.)
- Treasurer's Report**, 31.
- Westfield Normal School**, Report of Visitors of, 18; teachers and lecturers in, 18.
 statistics of, 19; appropriations and expenditures for, 32.
- White, Joseph**, Report of, as Treasurer of the Board, 31.
 Report of, as Secretary of the Board, 94.
 circular of, relating to Industrial Drawing, 148.
- Worcester County Institute**, 12.
- Worcester Normal School**, Resolves respecting establishment of, 101.
 grounds, plans and materials for, 102.

TOPICS IN THE ABSTRACTS OF SCHOOL COMMITTEES' REPORTS.

- Absenteeism**, 3, 4, 12, 26, 30, 45, 72, 127, 128, 161, 163, 198.
Apparatus, 3, 22, 102, 252, 258.
Arithmetic, 224, 251.

- Attendance, 3, 7, 10, 12, 16, 22, 26, 29, 30, 33, 34, 45, 72, 82, 88, 103, 131, 134, 137, 162, 202, 203, 205, 221, 224, 252, 261, 263, 273, 282.
 compulsory, 3, 7, 35, 73, 124, 127, 161, 181, 197, 199, 212, 225, 232, 235.
 relation of, to expenditures, 244.
- Boston, schools of, 231; Primary Schools of, 236; Evening Schools of, 237, 247.
 Girls' High and Normal School of, 234; High Schools of, 239, 247.
 Superintendent of, 238; truancy in, 243; Latin School of, 246; drawing in, 249.
- Children employed in manufacturing establishments, 170, 234.
- Common School System, 18.
 progress of, 19, 20, 46, 102, 108, 199, 276.
- Composition, 230, 231.
- Coöperation of parents, 9, 12, 16, 63, 82, 100, 125, 139, 140, 230, 251.
- Corporal punishment, 135, 142, 152, 185, 265, 286.
- Deaf-Mutes' School, 248.
- Discipline and government, 80, 92, 116, 135, 142, 181, 222, 276.
- Dismissal of scholars, 113.
- District System, refusal to return to, 23, 99.
 return to, and evils of, 63, 103, 105, 109, 131.
- Drawing, teachers of, 8, 14, 83, 114, 129, 136, 220.
 requirement and importance of, 16, 18, 36, 43, 49, 69, 76, 77, 78, 87, 91, 113, 121, 133, 133, 136, 146, 150, 152, 156, 161, 166, 175, 180, 186, 204, 208, 210, 212, 220, 225, 229, 249, 251, 252, 258, 260, 264, 269.
 school, mechanical and industrial, 278.
- Education, object of, 13, 164.
 importance of, 18, 21, 43, 50, 184, 199, 262.
- Evening Schools, 14, 42, 68, 77, 78, 83, 122, 133, 148, 151, 168, 196, 206, 237, 247.
- Examination of schools, 117, 209.
- Factory Schools, 44, 88, 122, 171.
- Geography, 130, 164, 174, 216.
- Graded course, 29, 62, 86, 103, 108, 118, 179, 229, 244, 263.
- Grammar, 79, 112, 155, 230, 232, 252.
- Grammar Schools, 9, 40, 67, 174, 178, 263.
 Latin in, 95.
- High Schools, 20, 21, 26, 28, 74, 169, 175, 239, 255.
 course of study in, 27, 41, 60, 91, 137, 169, 178, 192, 232, 245, 255.
 lectures in, 86.
- History, study of, 186, 217.
- Hoar, E. F., Hon., testimony of, in favor of general education, 184, 223.
- Home education and influence, 162, 205, 265.
- Industrial Education, 36, 43, 47, 128, 146, 225.
- Kindergarten Schools, 245.
- Libraries, 65, 218.
- Licensed minors, 248.
- Morals and Manners, 36, 141, 163, 267.
- Moral and Religious Instruction, 251.

INDEX.

cxix

Municipal System, preferred, 70, 99, 110, 115, 135, 180, 199, 261.

Music in schools, 9, 14, 17, 149, 175, 210, 248, 252.

Normal Schools, 13, 116, 203, 223, 227, 256, 265, 275.

Object-teaching, 17.

Oral Instruction, 17, 120.

Parents, relation and duty of, to teachers, 82, 101, 116, 125, 207, 224, 228, 233.

duties of, to schools, 12, 15, 16, 21, 25, 63, 82, 94, 100, 116, 118, 125, 132, 140, 160,
162, 201, 223, 233, 256.

Physical Training and Gymnastics, 79, 187, 189.

Primary Schools, qualification of teachers for, 65, 71, 82, 93, 105, 173, 223.

instruction in, 71, 82, 129.

importance of, 71, 82, 93, 95, 223.

of Boston, 236.

Penmanship, 114, 230, 264, 269.

Reading, 24, 60, 111, 154, 159, 164, 173, 251.

Salary and wages of teachers, 98, 218, 241, 257.

"boarding around," 113, 131.

School Committees, complaint against, 6.

School Books, 38, 81, 221, 240, 277.

School-Houses, 21, 28, 39, 63, 102, 113, 117, 125, 157, 165, 259, 261, 270, 272.

Schools, Public, superiority of, 430.

benefit of graded system of, 4, 11, 31, 64, 108, 118, 261.

assimilating effect of, 19.

number of terms of, 22, 23, 32, 62, 205, 207, 254, 260.

supervision of, 25, 86, 104, 133, 171, 177, 215, 271.

forcing system in, 37, 158, 182, 191, 213, 226.

large rooms and buildings for, 37.

formalism in, 38.

power and importance of, 48, 50, 97, 182.

principles on which to be governed, 50.

order of development of powers in, 52.

ascending grades of, 54, 62, 86.

relative value of studies in, 55.

regard for principles rather than processes in, 56.

competence of teachers in, 58, 111, 120, 223, 228, 242, 256, 258, 265, 281.

study of languages in, 59, 79, 232.

larger appropriations for, 65, 117, 118, 132, 204.

libraries for, 65.

sewing as an exercise in, 81.

government of, 80, 92, 142, 181.

selection of teachers for, 106, 228, 275.

examination of, 117, 209.

"detailed report of," 156.

health of pupils in, 160, 163, 182, 187, 226, 233.

conveying children to and from, 176, 209.

lessons in, 189.

hours of study in and out of, 190.

half-day system in, 191.

State tax for support of, 200.

complaints for excluding from, 202, 266.

chromes for, 208; classes in, 210.

Spelling, 159, 240, 251, 274.

Superintendent of Schools, 6, 25, 84, 86, 105, 114, 140, 171, 176, 183, 215, 252.

Tax by the State for support of Public Schools, 200.

Teachers' Institutes, 172, 255.

Teachers, evil of changing, 4, 71, 96, 119, 165.

training of, 13, 17, 29, 39, 64, 72, 84, 116, 203, 219, 223, 237, 256, 277.

qualification of, 17, 75, 76, 83, 111, 120, 133, 228, 242, 259, 265, 267, 273, 274, 275, 281.

meetings of, 31, 173, 217, 270.

library for, 65, 218.

compensation of, 82, 98, 218.

selection of, 106, 275.

authority of, 142, 283.

responsibility of, for truancy, 243

examination of, 257.

Thoroughness in study, 97, 103, 111, 112, 210.

Training Schools, or classes, 39, 75, 77, 84, 122, 142, 147, 277.

benefit and use of, 145, 147, 203.

Truancy, 33, 49, 92, 126, 168, 170, 195, 214, 224, 243.

by-laws concerning, 70, 214, 268, 271.

Truants, 106.

officers for, 106, 126, 195, 207.

school for, 122, 285.

ungraded school for, 194, 264.

Ventilation, 93, 189, 193.

Wilson, Henry, Hon., testimony of, in favor of educating the people, 184.

Writing, 114, 230, 264, 269.

Worcester Mechanical and Industrial Drawing School, 278.

APPENDIX.

Abstract of School Returns, i.

tabular statement of, ii.

recapitulation of, lvi.

Evening Schools, lix.

Reformatory and other State Schools, lx.

Tables, graduated, first series, showing the sum appropriated for each person between 5 and 15, lxi.

2d series, showing the ratio of the valuation of the towns to their appropriations for schools, lxxxi.

3d series, showing the ratio of the average attendance to the number of persons between 5 and 15 in the State, xciv.

ABSTRACT OF SCHOOL REPORTS.

(Towns from whose Reports Extracts are taken.)

	Page.		Page.
Abington,	216	Dighton,	31
Adams,	11	Dover,	189
Agawam,	108	East Bridgewater,	218
Alford,	12	Eastham,	4
Amesbury,	71	Easton,	32
Amherst,	129	Egremont,	15
Andover,	71	Everett,	159
Ashburnham,	250	Fair Haven,	33
Ashfield,	96	Fall River,	34
Ashland,	189	Fitchburg,	255
Athol,	252	Foxborough,	201
Attleborough,	28	Franklin,	203
Barnstable,	3	Freetown,	49
Becket,	13	Gloucester,	75
Bellingham,	193	Grafton,	256
Belmont,	140	Granby,	131
Berkley,	30	Hadley,	133
Berlin,	252	Halifax,	219
Bernardston,	97	Hancock,	15
Beverly,	72	Hanover,	220
Billerica,	141	Hardwick,	256
Blandford,	110	Harwich,	4
Bolton,	253	Haverhill,	76
Boston,	231	Hawley,	99
Boxborough,	142	Hingham,	221
Bradford,	74	Hinsdale,	16
Bridgewater,	217	Holden,	257
Brimfield,	112	Holliston,	160
Brookline,	194	Hopkinton,	161
Cambridge,	142	Hubbardston,	253
Canton,	196	Hudson,	162
Charlestown,	152	Kingston,	222
Charlton,	254	Lakeville,	223
Chester,	113	Lanesborough,	17
Chicopee,	113	Lawrence,	77
Cohasset,	197	Lee,	19
Concord,	156	Leicester,	260
Cummington,	131	Lenox,	20
Dalton,	13	Leverett,	99
Dana,	255	Lexington,	162
Dartmouth,	60		
Dedham,	198		
Deerfield,	97		
Dennis,	3		

	Page.		Page.
Lincoln,	164	Reading,	176
Littleton,	164	Rehoboth,	63
Longmeadow,	115	Rockport,	87
Lowell,	165		
Ludlow,	117	Salem,	88
Lunenburg,	280	Sandwich,	9
Lynn,	78	Saugus,	93
		Seekonk,	64
Manchester,	79	Scituate,	296
Marblehead,	80	Sharon,	207
Marlborough,	169	Shelburne,	104
Marshfield,	224	Sherborn,	176
Mashpee,	5	Shirley,	177
Medway,	203	Shutesbury,	165
Melrose,	171	Somerset,	64
Mendon,	261	Somerville,	173
Middleborough,	224	Southampton,	129
Middlefield,	135	Southbridge,	270
Milford,	262	South Hadley,	137
Millbury,	264	South Scituate,	237
Milton,	204	Springfield,	119
Monson,	117	Stockbridge,	25
Montague,	100	Stoughton,	238
Monterey,	21	Sunderland,	105
Mt. Washington,	22	Swampscott,	83
Nahant,	82	Taunton,	65
Natick,	172	Templeton,	271
New Bedford,	49	Tewksbury,	180
New Marlborough,	22		
Newburyport,	82	Upton,	273
New Salem,	102	Uxbridge,	273
Newton,	174		
Norfolk,	204	Wakefield,	181
Northampton,	136	Wales,	125
Northbridge,	265	Waltham,	183
No. Brookfield,	265	Walpole,	210
Northfield,	102	Wareham,	236
		Warren,	276
Orange,	103	Warwick,	107
Orleans,	6	Watertown,	163
		Wellfleet,	9
Palmer,	118	Wenham,	94
Paxton,	268	West Boylston,	276
Peabody,	85	West Bridgewater,	222
Peru,	23	Westfield,	126
Pittsfield,	25	Westford,	125
Plymouth,	225	West Newbury,	95
Provincetown,	6	Westfort,	79
		West Roxbury,	212
Quincy,	206	Weymouth,	214
		Winchester,	196
Randolph,	207	Woburn,	187
Raynham,	62	Worcester,	277

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Commonwealth of Massachusetts.

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To the Honorable Legislature of Massachusetts.

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Abstract of the Sufferings of the People call'd Quakers. From 1650 to 1666. London, 1733-38.	3
Adams, A. N. History of the Town of Fair Haven, Vt. Fair Haven, 1870.	1
Adams, Francis. The Elementary Education Act, 1870. London, [1870].	1
Adventures of Uncle Sam, in Search after his Lost Honor. By Frederick Augustus Fidfaddy. Middletown, 1816. .	1
Alexander, William. History of Women. Dublin, 1779. .	2
Allen, Joseph. Genealogical Sketches of the Allen Family of Medfield. Boston, 1869.	1
Allibone, S. A. Critical Dictionary of English Literature, and British and American Authors. Vol. 2. Philadelphia, 1870.	1

	VOLUME
Almanach de Gotha. Annuaire diplomatique et statistique pour l'année 1869-71. Gotha, [1868-70].	3
American Annual Cyclopædia and Register of Important Events of the Year 1870. Vol. 10. New York, 1871.	1
American Journal of Insanity. Vol. 27. Utica, 1870-71.	1
American Journal of Science and Arts. 2d Series, Vol. 50; 3d Series, Vol. 1. New Haven, 1870-71.	2
American Law Review. Vol. 5. Boston, 1871.	1
American Law Times. Vol. 3. Washington, 1870.	1
American Law Times Reports. Vol. 3. Washington, 1870.	1
American Literary Gazette and Publishers' Circular. Vol. 15, 16. Philadelphia, 1870-71.	2
American Naturalist. Vol. 3, 4. Salem, 1870-71.	2
American Remembrancer; or Essays, Resolves, &c., relative to the Treaty with Great Britain. Philadelphia, 1795.	3
American Whig Review. New York, 1845-52.	16
Amos, Sheldon. Difference of Sex as a Topic of Jurisprudence and Legislation. London, 1870.	1
Andrews, Alfred. Genealogy and Ecclesiastical History [of New Britain, Conn.]. Chicago, 1867.	1
Anniversary Calendar, Natal Book, and Universal Mirror. London, 1832.	2
Annuaire de l'économie politique et de la statistique, 1866-70. Paris, 1866-70.	5
Annual Register for 1868-70. London, 1869-71.	3
Annual of Scientific Discovery, 1868-71. Boston, 1869-71.	4
Ansell, G. F. The Royal Mint. 3d Ed. London, 1871.	1
Army and Navy Journal. Vol. 7, 8. New York, 1869-71.	2
Arnold, Edwin. The Marquis of Dalhousie's Administration of British India. 2 vol. in 1. London, 1862-65.	1
Arnott, Neil. Observations on National Education. New Ed. London, 1870.	1
Ashmead, J. W. Reports of Cases in the Courts of Common Pleas, Quarter Sessions, Oyer and Terminer, and Orphans' Court of the First Judicial District of Pennsylvania. St. Louis, 1871.	1
Atlantic Monthly. Vol. 26, 27. Boston, 1870-71.	2
Atlantis, The; or Register of Literature and Science of the Catholic University of Ireland. February, 1870. London, 1870.	1
Austro-Hungarian Empire and the Policy of Count Beust. By an Englishman. London, 1870.	1

	VOLUMES.
Ayckbourn, Hubert. Practice of the High Court of Chancery. 9th Ed. London, 1870.	1

B.

Backus, Isaac. History of New England. With Particular Reference to the Baptists. 2d Ed., by David Weston. Newton, 1871.	2
Baedeker, Carl. Handbook for Travellers. Northern Italy and Corsica. 2d Ed. Coblenz, 1870.	1
Bain, Alexander. Logic. Part 1st, Deduction. Part 2d, Induction. London, 1870.	2
Bankers' Magazine, and Statistical Register. Vol. 5, 3d Series. New York, 1870-71.	1
Barclay, D. R. Digest of the Decisions of the Supreme Court of Missouri. St. Louis, 1859-68.	2
Bastiat, Frédéric. Harmonies of Political Economy. Translated by P. J. Sterling. 2 pt. in 1. London, 1860-70.	1
Beale, D. Reports on the Education of Girls. London, [1870].	1
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	<hr/> 47

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28

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22

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PAMPHLETS.

Philadelphia. <i>Society for alleviating the Miseries of Public Prisons.</i> 16th Annual Report. Philadelphia, 1870..	1
Philadelphia County Prison. 22d Annual Report, 1869. Philadelphia, 1869.	1
Protestant Episcopal Church. Abstract of the Records of the Trustees of Donations. Boston, 1870..	1
Reinsch, Paul. <i>Die Meteorsteine.</i>	1
Rhode Island. 17th Report upon the Registration of Births, Marriages and Deaths, for the Year 1869. Providence, 1871.	1
Robinson, Charles, Jr. Argument against the Annexation of Charlestown, Somerville and Boston, 1871. Charlestown, 1871.	1
Rule, The, in Minot's Case again : as restated with Variations by the Supreme Judicial Court of Massachusetts. By a Layman. New York, 1871.	1
St. Louis. <i>Mercantile Library Association.</i> 25th Annual Report. St. Louis, 1871.	1
——— <i>Public School Library.</i> Annual Report, 1870. St. Louis, 1871.	1
[Series of Tracts on Religious Subjects.]	14
Shippen, William. Sermon preached Oct. 27, 1867, on the Death of W. Shippen. By H. A. Boardman. Philadelphia, 1867.	1
Toledo, Ohio. 13th Annual Report of Trade and Commerce for 1870. Toledo, 1871.	1
United States. Congressional Directory, 3d Session, 41st Congress. Washington, 1870.	1
——— Report from the Committee on Military Affairs on the National Asylum. [Washington, 1871.]	1
——— <i>Department of the Treasury.</i> Report of the Special Commissioner of the Revenue, for the Year 1869. Washington, 1869.	1
——— <i>Bureau of Statistics.</i> Monthly Report. No. 3, 4. Series 1870-71. Washington, 1871. (2 copies.)	2
——— <i>Department of War. Bureau of Refugees, Freedmen and Abandoned Lands.</i> Annual Report of Gen. O. O. Howard, 1870. Washington, 1870.	1
——— 10th Semi-Annual Report on Schools for Freedmen, July 1, 1870. Washington, 1870.	1
——— <i>Library of Congress.</i> Annual Report, 1870. Washington, 1871.	1
Vermont. Legislative Directory, 1870. Montpelier, 1870.	1

PAMPHLETS

Vogel, F. C. W. Verzeichniss ausgewählter Werke aus dem Verlage von F. C. W. Vogel, in Leipzig, 1870. Leipzig, 1870.	1
Waterbury, Conn. <i>Bronson Library</i> . 1st and 2d Annual Reports. Waterbury, 1870-71.	2
Watertown, Mass. <i>Public Library</i> . 3d Report. Boston, 1871.	1
Westerly, R. I. <i>Pawcatuck Library Association</i> . Address at its Annual Meeting, Dec. 19, 1870. By O. H. Kile. Providence, 1871.	1
Winthrop, R. C. Oration on the 250th Anniversary of the Landing of the Pilgrim Fathers at Plymouth, 21st Dec. 1870. Boston, 1871.	1
Worcester, Mass. <i>Free Public Library</i> . 11th Annual Report. Worcester, 1871.	1
—— <i>Young Men's Christian Association</i> . Annual Report, 1871. Worcester, 1871.	1
[Wright, Elizur.] Life Insurance. [Boston, 1871.] . . .	1
Yale College. Catalogue of the Officers and Students, 1870-71. New Haven, 1870.	1

174

Volumes received from Officers of the Government.

VOLUMES

Acts and Resolves, 1871. Boston, 1871. (6 copies.) . . .	6
Private and Special Statutes, 1866-70. Vol. 12. Boston, 1871. (6 copies.)	6
Journal of the Senate, 1870. Boston, 1870. (6 copies.) . .	6
Journal of the House of Representatives, 1869, 70. Boston, 1869-70. (6 copies.)	12
Documents printed by Order of the Senate, 1871. Boston, 1871. (6 copies.)	12
Documents Printed by Order of the House, 1871. Boston, 1871. (6 copies.)	12
Public Documents for 1869. Boston, 1870. (5 copies.) . .	20
Annual Report of the Adjutant-General, 1870. Boston, 1871. (2 copies.)	2
18th Annual Report of the Board of Agriculture, 1870. Boston, 1871. (5 copies.)	5
7th Annual Report of the Board of State Charities, 1870. Boston, 1871.	1

	VOLUMES.
15th Annual Report of the Insurance Commissioner, 1870. Boston, 1870. (2 copies.)	2
2d Annual Report of the Railroad Commissioners, January, 1871. Boston, 1871. (2 copies.)	2
Record of the Massachusetts Volunteers. 1861–65. Vol. 2. Boston, 1870. (3 copies.)	3
Report of the Auditor of Accounts, 1870. Boston, 1871. (4 copies.)	4
Report of the Bureau of Statistics of Labor, 1870–71. Bos- ton, 1871. (2 copies.)	2
School Reports of Towns and Cities. 1870–71.	6
	<hr/> 101

Pamphlets received from Officers of the Government.

	PAMPHLETS.
Abstract of the Attested Returns of Corporations organized during the Year 1870. Boston, 1871.	1
Aggregates of Polls, Property, Taxes, &c., as assessed May 1, 1870. Boston, 1871.	1
Annual Report of the Attorney-General, 1869, 70. Boston, 1870–71.	2
Annual Report of the Commissioner of Savings Banks, 1870. Boston, 1871.	1
11th Annual Report of the Massachusetts Nautical School, 1870. Boston, 1871.	1
23d Annual Report of the Massachusetts School for Idiotic and Feeble-minded Youth, 1870. Boston, 1871.	1
39th Annual Report of the Perkins Institution and Massachu- setts Asylum for the Blind, 1870. Boston, 1871. (2 copies.)	2
17th Annual Report of the State Almshouse at Bridgewater, 1870. Boston, 1871.	1
17th Annual Report of the State Almshouse at Monson, 1870. Boston, 1871.	1
17th Annual Report of the State Almshouse at Tewksbury, 1870. Boston, 1871.	1
14th Annual Report of the State Industrial School for Girls, 1870. Boston, 1871.	1
15th Annual Report of the State Lunatic Hospital at North- ampton, 1870. Boston, 1871.	1

	PAMPHLETS
17th Annual Report of the State Lunatic Hospital at Taunton, 1870. Boston, 1871.	1
38th Annual Report of the State Lunatic Hospital at Worcester, 1870. Boston, 1871.	1
Annual Report of the State Prison, 1870. Boston, 1871.	1
24th Annual Report of the State Reform School, 1870. Boston, 1871.	1
Corporation Acts of 1870-71. [Boston, 1871.]	1
Laws relating to the Assessment and Collection of Taxes upon Corporations in the Commonwealth. Boston, 1871. . . .	1
Report of the Treasurer and Receiver-General, 1870. Boston, 1871. (2 copies.)	2
Stocks and Bonds held by Massachusetts Corporations, May 1, 1871, as Collateral Security for Borrowed Money or other Liability. [Boston, 1871.]	1
Tax Documents, 1871. Boston, 1871. (2 copies.)	6
Grinnell, C. E. Sermon delivered at the Annual Election, Jan. 4, 1871. Boston, 1871.	1
	<hr/> 30

Maps.

Acton and Nashua R. R. Map of Proposed Railroad. . . .	1
Allston and Newton. Survey for a Branch Railroad. E. S. Philbrick, Civil Engineer. 1871.	1
Belchertown to Chicopee Falls. Plan and Profile of Route of Proposed Railroad, 1871. G. A. Ellis, Engineer. . . .	1
Berkshire R. R. Profile from Conn. State Line to West Stockbridge.	1
Bolton and Worcester. Map and Profile of Proposed Railroad Route. W. F. Ellis, Engineer. 1871.	1
Boston, Barre and Gardner R. R. Map of Proposed Extension from Gardner to Winchendon. Worcester, 1871. Surveyed by H. B. Potter.	1
—— Plan of Railroad Route between Gardner and Winchendon. Surveyed by H. B. Potter. 1869.	1
—— Profile of a Proposed R. R. from Gardner to Winchendon. [1871.]	1
Brighton. Plan of the Town, 1866. H. M. Wightman. . . .	1
Concord Railroad. Map.	1

Granite Railroad. Plan [and Profile] of the Proposed Extension to the Old Colony and Newport Railway. Boston, 1871. S. L. Minot, Engineer.	1
Holyoke to Be chertown. Plan of the Proposed Route for Railroad. Surveyed by G. R. Nash, Civil Engineer. 1871. ——— Profile of Proposed Route. Surveyed by G. R. Nash, Civil Engineer. 1871.	1
Lancaster and Leominster R. R. Profile. [1871.] . . .	1
Lancaster to North Leominster. Railroad Route. 1870. A. C. Buttrick & Wheeler, Civil Engineers.	1
Lee and Hudson R. R. Map of Proposed Railroad, 1871. .	1
Lee and West Stockbridge Rail Road. Plan 2. Welton & Bonnett, C. E. 1871.	1
Marblehead Branch Rail Road. Copy of the Location, 1839. By C. A. Putnam, C. E. 1871.	1
Massachusetts. New Map. Compiled from the Best Authorities. E. P. Dutton & Co. Boston, 1866.	1
Massachusetts Central R. R. Map. First Division. From Boston to Northampton. J. H. Bufford's Lith.	1
—— Profile of the R. R. from Stony Brook to Boston. .	1
Mill River to the Housatonic R. R. Plan and Profile of a Proposed Rail Road. Surveyed by G. W. Butterfield, Civil Engineer. Lowell, 1855.	1
Mount Tom Station to Easthampton. Map [and Profile] of Railroad Line. 1867.	2
Nashua and Concord Railroad. Map [and Profile] of Proposed Railroad Route. 1870. W. F. Ellis, Engineer. .	1
New Bedford and Taunton R. R. Plan [and Profile] of the Proposed Extension of the R. R. 1871. G. A. Briggs, Civil Engineer.	1
Pepperell to E. Wilton. Plan and Profile of Rail Road Route. Surveyed, 1844. Waldo Higginson, Engineer. .	1
Pepperell to Lexington. Map and Profile of Routes surveyed for a Railroad, 1870. J. B. Cunningham, Engineer. . . .	1
Pepperell to Tyngsborough. Map and Profile of Railroad Route. Surveyed, 1871. J. B. A. Cunningham, Engineer. .	1
Plymouth to Sandwich. Map of Proposed Railroad. S. L. Minot, Engineer. 1871.	1
Pratt's to Winchendon. Plan and Profile for a R. R. 1870. W. F. Ellis, Engineer.	1
Sherborn to Needham. Plan [and Profile] of Proposed Railroad Route. W. F. Ellis, Engineer. 1871.	1
Walpole Branch R. R. Plan and Profile. 1871.	1

West Dedham Rail Road. Southern Route. Nathaniel Smith, Engineer, 1871.	1
Weymouth Iron Company's Railroad. Plan of the Premises. Surveyed by H. Harnden, 1851.	1
—— Plan of the Railroad. Boston, 1871. S. L. Minot, Engineer.	1
—— Project for the Railroad. E. Frost, Engineer.	1
	<hr/> 37

*Number of Volumes added to the Library from October 1, 1870,
to September 30, 1871.*

By Purchase,	746
By Domestic Exchanges,	339
By Foreign Exchanges,	28
By Donation,	74
By Officers of the Government,	101
	<hr/> 1,288

Pamphlets.

By Purchase,	786
By Domestic Exchanges,	64
By Foreign Exchanges,	22
By Donation,	174
By Officers of the Government,	30
	<hr/> 1,076

Number of Maps,	37
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Books Lost or Missing.

Debates of the Constitutional Convention, 1853. Vol. 1. (D.)	1
Mass. Supreme Court Reports. Gray. Vol. 14. (A.)	1
Life of Major-Gen. John Sullivan. Amory.	1
Autobiography of Lord Dundonald.	1
Louis Napoleon. Baxter.	1
History of France..	2
Adventures in the Apache Country. Browne.	1
Early History of Bennington, Vt. Jennings.	1
Camp-fire and Cotton Field. Knox.	1

Early Recollections of Newport. Channing.	1
West Virginia. Dodge.	1
Home of Washington, or Mount Vernon and its Associations. Lossing.	1
Large's Way about London.	1
Switzerland. Bædeker.	1
Witch Hill. Mudge.	1
Terra Mariæ: Maryland Colonial History. Neill.	1
History of Agriculture and Prices in England. Rogers.	2
Eggs and Poultry as a Source of Wealth.	1
History of the Revolt of the Netherlands. Schiller.	1
History of Poland. Fletcher.	1
The Merrimack River. Meader.	1
Report of the Commissioners of Emigration of New York, 1869-70. (Pamphlet.)	1
Tables of Revenue, Population, and Commerce.	1
	<hr/> 25

Books Charged out and not Returned.

Special Laws of Mass. Vol. 8. (C.)	1
Admiralty Decisions in the District Court of the U. S. Peters. Vol. 2.	1
Journal of the House of Representatives of Mass., 1867. (B.)	1
Cyclopædia of Wit and Humor. Burton. Vol. 2.	1
Travels in North America, 1780-82. Chastellux. (A.)	1
History of the Constitution of the U. S. Towle.	1
The Darwinian Theory examined.	1
Wild Scenes in South America. Paez.	1
Historical Discourses on the Completion of 200 Years, from the Beginning of the First Church in New Haven. Bacon.	1
	<hr/> 9

Maps Missing.

Map of Buzzard and Barnstable Bays Canal. U. S. Coast Survey: A. D. Bache. 1860.	1
Plan and Profile of the Walpole Branch R. R. 1871.	1
Map of Gloucester Harbor. L. J. Presson. 1848.	1
	<hr/> 3

Dr.	COMMONWEALTH in account with TRUSTEES OF STATE LIBRARY.		Cr.
1870.			
Oct. 5,	Little, Brown & Co.'s bill, books, . . .	\$46 00	By balance from last account, . .
7,	J. L. Fairbanks & Co.'s bill, binding and stationery, . .	115 70	balance of annual appropriation, 1870, . .
17	Soule, Thomas & Winsor's bill, Law Reports, . .	8 00	annual appropriation, in part, for 1871, . .
24,	Vt. Historical Collections, . .	4 00	sum received on account, with Henry Stevens, . .
Nov. 7,	Wm. P. Lunt's bill, books, . .	54 59	annual appropriation, in part, for 1871, . .
7,	Soule, Thomas & Winsor's bill, Law Reports, . .	5 00	annual appropriation, in part, for 1871, . .
7,	Wm. P. Lunt's bill, books, . .	8 50	annual appropriation, in part, for 1871, . .
14,	Annals of Deaf Mutes, 1870, . .	1 50	
25,	Benedict's Dist. Court Reports, . .	9 00	
25,	Soule Thomas & Winsor's bill, Law Reports, . .	8 00	
Dec. 1,	B, 1870, . .	5 00	
1,	, vol. 24, . .	3 80	
6,	No Am. Review, 1871, . .	9 00	
18,	monthly and weekly, . .	7 00	
19,	, Discourse, . .	1 50	
22,	Soule, Thomas & Winsor's bill, Law Reports, . .	14 00	
30,	Hall's Health, &c., . .	4 00	
1871.			
Jan. 4,	Red Book of Michigan, . .	4 00	
4,	Conn. Historical Collections, vol. 2, . .	2 60	
9,	W. H. Piper & Co.'s bill, books, . .	22 62	
10,	A. Williams & Co.'s bill, books, . .	20 64	
11,	Am Builder, to Jan., 1872, . .	3 00	
18,	Biennial Register, 1869, . .	5 00	
19,	Hist. of Worcester in War of Rebellion, . .	4 50	
20,	Am. Naturalist. W. S. West, . .	4 00	
24,	Annals of Williams College, . .	5 00	
Feb 1,	J. K. Wiggin's bill, books, . .	11 25	

Feb. 3,	Gould & Lincoln's bill, books,	.	.	.	.	34 50
10,	New York Evening Post, .	.	.	.	.	12 00
10,	Wm. P. Lunt's bill, books, .	.	.	.	.	35 25
15,	Tribune Almanac, 1871, .	.	.	.	.	40
16,	H. F. Walling, Atlas of Mass,	.	.	.	.	12 00
21,	Journal of Numismatics, 1870,	.	.	.	.	2 00
21,	New Eng. Directory, 5 vols.,	.	.	.	.	20 00
25,	Annals of Deaf Mutes, 1871,	.	.	.	.	1 50
Mar. 2,	Cong. Quarterly, vol. 12, 1870,	.	.	.	.	2 40
15,	Hist. of Numismatics, &c, .	.	.	.	.	6 50
15,	Stevens & Haynes—bill of exchange,	.	.	.	.	44 10
16,	Boston Directory, 1832, .	.	.	.	.	2 00
21,	Henry Stevens' bill, books, .	.	.	.	.	120 65
30,	Year Book, 1870, .	.	.	.	.	1 50
31,	Wm. P. Lunt's bill, books, .	.	.	.	.	31 48
Apr. 12,	Soule, Thomas & Winsor's bill, Law Reports,	.	.	.	.	8 50
17,	Gould & Lincoln's bill, books, .	.	.	.	.	3 00
18,	Wm P. Lunt's bill, books, .	.	.	.	.	43 30
24,	Thorwaldsen's Works, .	.	.	.	.	25 00
24,	Provincial Laws, 1692 to 1740, .	.	.	.	.	1 50
May 1,	Soule, Thomas & Winsor's bill, Law Reports,	.	.	.	.	16 00
1,	Hunt's Merchants' Year Book, 1871, .	.	.	.	.	5 00
1,	Stevens & Haynes—bill of exchange, .	.	.	.	.	265 36
2,	Geo. B. Reed's bill, Law Reports, .	.	.	.	.	13 00
4,	Pub's Gazette and Circular, .	.	.	.	.	2 00
8,	Vincent's Hist. of Delaware, Nos. 6 to 15, .	.	.	.	.	3 00
16,	Wm. P. Lunt's bill, books, .	.	.	.	.	238 93
17,	J. K. Wiggin's bill, books, .	.	.	.	.	10 50
20,	Boston Traveller, to April, 1871, .	.	.	.	.	10 00
29,	Elements of Tachygraphy, .	.	.	.	.	2 00
29,	Wm. P. Lunt's bill, books, .	.	.	.	.	9 95

Dr.		COMMONWEALTH in account with TRUSTEES OF STATE LIBRARY--Continued.		Cr.
1871.				
June 5,	Am. Law Times, 1871,		\$8 00	
14,	An Cyclopaedia, 1870,		5 00	
14,	Fairbanks & Co.'s bill, binding and stationery,		98 82	
15,	Backus' History,		4 50	
30,	Am. Journ.		2 00	
July 3,	Com. and R. July 1, 1872,		10 00	
17,	Little, Bro.		152 97	
18,	A. Williams & Co.'s bill, books,		17 70	
26,	Wm P. Lunt's bill, books,		8 00	
Aug. 2,	Laws of Kansas. 1864. '66. '67. '69,		5 00	
5,	Oct. 1, 1872,		8 75	
16,	Aug., 1872,		6 00	
24,	range,		682 80	
28,	4 and 5,		10 00	
Sept. 21,	range,		35 00	
	Freight and charges on cases of foreign books,		47 66	
	Express charges, postage, &c.,		67 81	
	Balance to new account,		107 62	
			<u>\$2,585 25</u>	<u>\$2,585 25</u>

For the year ending September 30, 1871, there were, for the increase of the library, the following

RECEIPTS.

Balance from previous year, Oct. 1, 1870,	\$275 25
Annual appropriations, in part for 1870	
and 1871,	2,300 00
Sum received on account,	10 00
	<hr/> \$2,585 25

EXPENDITURES.

Books, pamphlets, periodicals and maps, .	\$2,148 14
Binding, stationery, &c.,	214 52
Freight of cases of foreign books,	47 66
Express charges, postage, &c.,	67 31
	<hr/> \$2,477 63
Balance to new account,	107 62
	<hr/> \$2,585 25

ADDITIONS.

Number of volumes added,	1,288
Number of pamphlets added,	1,076
Number of maps added,	87

LOSSES.

The number of books lost annually has been small. Sometimes, volumes charged to members of the legislature or officers of the government are not soon returned, and a few are never recovered. The loss in such cases is through the neglect and forgetfulness of the persons permitted to remove the books, rather than through any remissness of those having charge of the library. In some cases, there is apparently an indifference to the obligation to care for State property and to restore promptly books drawn out, and all suitable efforts to secure their return are unavailing. Losses from this cause are happily unimportant, and generally can be easily repaired. The alcoves are so protected, that few books have been lost by access of visitors and book thieves during the recess of the legislature. Yet

a larger number was clandestinely taken during the last session than in any or all previous years. They were stolen, as there is sufficient reason to believe, by one person, a stranger visiting the library at different times professedly for consultation, and having perhaps a single accomplice. Embracing his opportunity, books were concealed under his garments, when he withdrew quietly to renew his operations on a following day. The number of books taken was twenty-five. They were rather attractive in binding but not rare or of much cost. Most or all of them were offered for sale at one of our second-hand book-stores, at such low prices as to awaken a suspicion that they had been dishonestly obtained. This suspicion led to inquiry and to a discovery of the depredations while in progress; but indiscreet and unfortunate proceedings defeated all attempts to arrest the criminal. Twelve, or about half of the books have been returned to the library; and it was found, on examination, that every volume had been mutilated by removing library marks and stamps and the title-pages and other leaves, so far as was supposed necessary to destroy all proof of ownership.

This loss, fortunately so unimportant, is the natural result of an undue exposure of the volumes, which, while it ministers to the convenience of some whom it is desirable to favor, is also dangerous to the library. From the beginning, an established rule has allowed members of the legislature an unrestricted access to every alcove, and the use of a key for the purpose. In using this privilege, the alcoves must often remain open not only to the privileged and trustworthy but to others, without its being possible to guard the alcoves sufficiently against the entrance of strangers who are thieves in a gentleman's garb. It is, however, a matter for congratulation that, by constant watchfulness and after a thorough annual inspection, nothing of much value is known to have been clandestinely taken from the library for more than twenty years, notwithstanding the dangers to which it has been exposed.

DONATIONS.

A list of donations received during the year is given in the foregoing pages. The donors were Hon. Henry Wilson, Hon. Robert C. Winthrop, Dr. Edward Jarvis, Dr. Samuel A. Greene,

B. G. Northrop, J. N. Genin, Theodore Lyman, Jr., C. A. Morse, J. N. Murphy, J. Smith Homans, J. J. Barclay, Hon. N. B. Shurtleff, C. B. Stuart, Edward McPherson (Clerk U. S. House Rep.), C. D. Bradlee, Charles Cowley, Consul-General of North German Union, Prof. Agassiz, Collins Stone, James Harris, Henry Lee, Jr., Dr. George B. Loring, J. T. Woodward, and Hon. Joel Parker.

AGENCY.

The foreign agency, through the firm of Stevens & Haynes, London, continues to be satisfactory. Through their kind consideration and suggestion, the library has procured during the year a valuable collection of pamphlets belonging to the late Lord Justice Rolt. There were in the series 573, including seven volumes handsomely bound in calf. They are mostly of a legal, judicial and political character, and many are timely and able discussions of subjects of public interest, and illustrative of the spirit and history of the times. The entire cost of the collection to the library was forty-five dollars.

A small additional appropriation is respectfully solicited, to enable the trustees to provide further conveniences, and for other purposes.

Respectfully submitted.

JOSEPH WHITE, *Librarian*.

STATE LIBRARY, October 14, 1871.

NINETEENTH ANNUAL REPORT

OF THE

SECRETARY

OF THE

Massachusetts Board of Agriculture,

WITH AN APPENDIX

CONTAINING

REPORTS OF DELEGATES APPOINTED TO VISIT
THE COUNTY EXHIBITIONS,

AND ALSO

RETURNS OF THE FINANCES OF THE AGRICULTURAL SOCIETIES.

FOR

1871.

BOSTON:

WRIGHT & POTTER, STATE PRINTERS,

No. 79 MILK STREET (CORNER OF FEDERAL).

1872.

STATE BOARD OF AGRICULTURE.
1872.

MEMBERS EX OFFICIIS.

HIS EXCELLENCY WILLIAM B. WASHBURN.
HIS HONOR JOSEPH TUCKER.
HON. OLIVER WARNER, *Secretary of the Commonwealth.*
WILLIAM S. CLARK, *Pres. Mass. Agricultural College.*

APPOINTED BY THE GOVERNOR AND COUNCIL.

	Term expires
LOUIS AGASSIZ, of Cambridge,	1873
MARSHALL P. WILDER of Boston,	1874
JAMES F. C. HYDE, of Newton,	1875

CHOSEN BY THE COUNTY SOCIETIES.

Massachusetts,	LEVERETT SALTONSTALL, of Newton, .	1874
Essex,	GEORGE B. LORING, of Salem, .	1875
Middlesex,	JOHN B. MOORE, of Concord .	1873
Middlesex North,	JONATHAN LADD, of Lowell, .	1874
Middlesex South,	JOS. N. STURTEVANT, of So. Framingham, .	1875
Worcester,	O. B. HADWEN, of Worcester, .	1875
Worcester West,	THOMAS P. ROOT, of Barre, .	1875
Worcester North,	EUGENE T. MILES, of Fitchburg, .	1875
Worcester North-West,	FARWELL F. FAY, of Athol, .	1874
Worcester South,	NEWTON S. HUBBARD, of Brimfield, .	1874
Worcester South-East,	WILLIAM KNOWLTON, of Upton, .	1873
Hampshire, Franklin and Hampden, .	A. PERRY PECK, of Northampton, .	1873
Hampshire,	LEVI STOCKBRIDGE, of Amherst, .	1874
Highland,	JONATHAN McELWAIN, of Middlefield, .	1875
Hampden,	WILLIAM BIRNIE, of Springfield, .	1873
Hampden East,	HIRAM CONVERSE, of Palmer, .	1873
Union,	ENOS W. BOISE, of Blandford, .	1874
Franklin,	THOMAS L. ALLIS, of Conway, .	1874
Deerfield Valley,	ROGER H. LEAVITT, of Charlemont, .	1875
Berkshire,	ANDREW J. BUCKLIN, of South Adams, .	1873
Hoosac Valley,	NAHUM P. BROWN, of North Adams, .	1873
Housatonic,	RICHARD GOODMAN, of Lenox, .	1873
Norfolk,	ELIPHALET STONE, of Dedham, .	1874
Hingham,	ALBERT FEARING, of Hingham, .	1873
Bristol,	AVERY P. SLADE, of Somerset .	1875
Bristol Central,	NATHAN DURFEE, of Fall River, .	1873
Plymouth,	CHARLES G. DAVIS, of Plymouth, .	1875
Marshfield,	GEORGE M. BAKER, of Marshfield, .	1873
Barnstable,	S. B. PHINNEY, of Barnstable, .	1874
Nantucket,	ANDREW M. MYRICK, of Nantucket, .	1875
Martha's Vineyard,	HERMAN VINCENT, of Chilmark .	1874

CHARLES L. FLINT, *Secretary.*

NINETEENTH ANNUAL REPORT
OF THE
SECRETARY
OF THE
BOARD OF AGRICULTURE.

To the Senate and House of Representatives of the Commonwealth of Massachusetts.

The products of the farm, and, of course, the prosperity of the farmer, are dependent very much upon the characteristics of the season, and especially upon the distribution of warmth and moisture throughout the growing months. Neither the aggregate amount of rainfall, nor the average range of the thermometer, will convey an accurate idea as to whether the conditions are favorable or unfavorable for the growth of plants. It is the general distribution of rain and heat from which we are to judge of the season in its relation to the productive industries of the farm.

Nor is this all. The character of one season has its influence upon the crops of succeeding years. This fact has been quite apparent during the past year, so apparent as to become a subject of common remark among farmers. The severe and almost unprecedented drought of 1870 affected all tillage lands, mowing and pasturage, to an extent rarely observed before. The old fields did not recover, and have not yet recovered, from its effects. But its influence was complicated by another drought, of less severity to be sure, but taken in connection with that of the preceding year, and the open winter interven-

ing, scarcely less disastrous to all forms of plant growth. With the exception of a few localities favored with occasional showers, the hay crop was in consequence diminished to a considerable extent, root crops on the drier lands failed, and the pastures became so short as to compel farmers who had neglected to sow corn for fodder, to resort to their winter stores of hay in the barn. The almost total failure of the apple crop, which may naturally enough be ascribed to other causes than the peculiar nature of the past summer, and partly indeed to the overbearing of the season previous, has contributed to make the year one of uncommon hardship to the farming community.

The most obvious lesson to be derived from the experience of the year is, the importance of deep and thorough cultivation and the frequent stirring of the soil among our cultivated crops. Lands that have been deeply tilled have suffered less from the dry weather than others. Even the old fields that were in a high state of cultivation have suffered less than those that had been allowed to run out. On these lands the hay crop was so slight as, in many instances, to be scarcely worth the expense of gathering. The only thing left in such cases was to plough up and re-seed ; this has been done to a greater extent, probably, than in any previous season. This operation involves expense, and is attended with some risks of loss and failure of the seed to take, especially when the supplies of manure are inadequate. Unless the land is already in a high state of fertility from previous cultivation, it is idle to expect a " good catch " without an application of manure. This is necessary to stimulate the young plant to the formation of roots, and to push it forward to a size and strength which will enable it to withstand the obstacles to its growth.

Another equally obvious lesson which the experience of the year teaches is, that the sowing of any grain with our grass seed is detrimental and to be avoided. The low yield of the grass and hay crops may be ascribed very largely to the failure, more or less complete, of newly sown lands. Estimating the loss to the whole State from this source by what is known in a single town where the facts have been gathered with care, and it cannot fall short of half a million dollars. This includes the loss of seed and expense and cost of labor in sowing, or the immediate preparation for it.

The cases are rare where the seeding with grain of any kind will not entail a loss of from twenty to twenty-five per cent. in the quantity and value of the grass crop for some years in succession. This will be the case in more than seven lots in ten, and if, in some instances, the result is satisfactory, it still holds good, as a general rule, that it would have been far more satisfactory had the grass seed been sown alone.

It is clear enough on a moment's reflection that a grain crop of any kind, the oat especially, draws from the soil the nutriment which is essential to the early life and growth of the grass. The result is a feeble and tender root, and an equally weak and sickly stalk. If here and there a delicate plant struggles along till a July sun, when the grain is cut and the shade which has enfeebled its growth is suddenly removed, the chances are that it will quickly yield to its fate and die. But myriads of seeds have done less even than this, and died from want of the food which the grain has robbed them of, almost as soon as they germinated. The loss and waste of grass seed, by this course alone, is perfectly enormous. One would suppose that seed costing from three to five dollars a bushel, like orchard grass and Timothy, or from six to eight dollars, like redtop, would be husbanded with greater care.

Now nothing is more true than that the grass and hay crop is the main stay of our farming. We are greatly dependent upon it. Moreover, it is admitted by the wisest and most experienced farmers among us, that a grass farm and the production of hay is about the most profitable branch of agriculture in this State. Why then, should not our grass seed, for which we pay so much, have an equal chance for life and strength of growth with our other and less expensive seeds? Why should we smother so large a percentage of it out of existence and deprive the remainder of the vitality and vigor which a free growth in the sun and the exclusive use of all the elements of its life and health in our stingy soils alone can give? We are not apt to be so improvident in smaller things; why should we be so in this, that has so important a bearing upon the great staple of our farming industry?

I am prepared both from experience and observation to say and to maintain,—

1st. That early fall seeding without grain should be adopted in practice in preference to seeding in spring.

2d. That, as a general rule, it is poor economy to take any grain crop either with or immediately preceding the seeding down to grass. That the grass being the ultimate and paying crop, it is bad practice to reduce the land by the draught which a grain crop makes upon it.

3d. That wherever from any local reason it becomes desirable to take a crop of spring grain, it is more economical to sow the grain alone in spring, and to plough up the stubble and sow the grass seed alone in the early fall.

4th. That in cases where it seems desirable to sow grass seed in spring, it is better to sow it alone and let it take its chance, without compelling it to struggle for existence under the disadvantages of a grain or any other crop.

5th. That in seeding down in August or early in September we are following nature as to time, and that, unless the ground is already rich and in high condition, it is necessary to give the seed the benefit of an application of manure on or near the surface to which the seed is applied.

6th. That in the selection of seed for mowing lots and hay, we should choose varieties to mix that blossom at or nearly at the same time, and not mix very early and very late varieties together.

These propositions are clear and easily understood. I believe their adoption and application in practice upon every farm in Massachusetts would largely increase the grass and hay crop and materially promote the prosperity of our agriculture.

Among the noticeable features of the year was the visitation of the *Epizootic Aphtha*, or Foot-and-Mouth Disease, which at the time of my last Report had already appeared at certain points and excited considerable alarm. Fortunately the facts in regard to it soon became known, and prompt action was taken for its suppression. The Report of the Commissioners on Contagious Diseases among Cattle, giving a full account of the introduction and spread of the malady, will be found on page 244, to which reference is respectfully made.

PUBLIC MEETING OF THE BOARD

AT FALL RIVER.

The public meeting of the Board was held in the city of Fall River, on Tuesday, Wednesday and Thursday, November 21, 22 and 23, and was attended by most of the members, as well as by quite a number of the farmers in the vicinity, though the number was not so great as it probably would have been in a more rural neighborhood.

The meeting commenced at twelve o'clock, on Tuesday, in the Music Hall, generously offered by Dr. DUFEE for the use of the Board. The Board was called to order by Dr. DUFEE, as Chairman of the Committee on Meetings, who delivered the following address.

Gentlemen of the Board of Agriculture :

I understand it is customary on this our public meeting, for the Chairman of the Committee of Arrangements to call the meeting to order, and in his introductory remarks to refer to such branches of industry, as may be calculated to give interest to the occasion.

I can say, gentlemen, it gives me great pleasure to welcome you, and each of you, to our county, and especially to this our city. I see among you many strong and tried friends of agriculture, those who have been laboring for years to extend a knowledge of this most important science among the yeomanry of the State. And I rejoice to know, that you have not labored in vain, nor spent your strength for naught. You are permitted on this occasion to witness the fruit of your labors, and rejoice to know that Massachusetts among other beneficent institutions, has an Agricultural College, which has already proved an honor to the State.

I might also speak of the many county societies and farmers' clubs, which are diffusing intelligence among the masses. You will expect, however, that on the present occasion I should speak more particularly of my own county,—the county of Bristol.

In respect to the fertility of its soil, it does not compare very favorably with many other counties in the Commonwealth. We have a great variety of soil, capable of a high state of cultivation ; but from various causes it has been much neglected, and large tracts of land have been left to run to waste, and have become almost valueless.

From my early knowledge of the habits and pursuits of my ancestry, I can call to mind the indolent and inactive life they pursued. They had no relish for the cultivation of the soil any further than their own immediate wants. The farm of four hundred acres, on which a large portion of this city is built, produced less than what is now produced on many a farm of less than fifty acres. The very grounds on which my residence now stands, at one period in my remembrance, was reputed too poor to raise even white beans, and I have seen on the adjoining land a crop of grass so light that it was difficult to find it when mowed. These same lands have yielded the past year more than three tons of hay to the acre.

For a long series of years, the progress of agricultural science has been very slow, and even now the principal pursuits of our county are manufacturing, whale fishery and the mechanic arts. We have had in the past among us many strong and ardent friends of agriculture,—men who were willing to devote their time and means to promote its interest ; but a large majority of the community have been disposed to shun all participation in the cause.

I cannot, however, forget on this occasion, one who was widely known as a strong and persistent friend of agriculture ; and perhaps no man in our county did more to inaugurate new measures to advance the interest of the Bristol County Society than this man. I refer to the Hon. J. H. W. Page. He was truly my friend. It was mainly through his influence, that I was first led to take an interest, and finally to become identified with the management of the society.

At the time I became acquainted with the society (there being at that time only one society, the Bristol County), we had no fixed location, although for the most of the time our annual gatherings were held in Taunton.

In 1854, the Horticultural Society of New Bedford gave our society a cordial invitation to meet with them, engaging on

their part to use their influence to promote the interest of the fair, at the same time our society was to receive the entire proceeds. The union of horticulture with agriculture gave a new impulse to the society, and the exhibition proved very successful in creating a new interest, as well as in a pecuniary point of view. Our society received quite an addition to its funds, and from that time horticulture has been quite an important part of the exhibition.

I wish here to notice the influence which has been exerted, in advancing the interest of horticulture and floriculture by the example of the late Hon. James Arnold of New Bedford. What little taste and passion I ever had in these branches, was first created by visiting his beautiful garden, and there meeting the proprietor, who seemed to take as much delight in exhibiting the beautiful, as I could in witnessing. From that time I resolved, if life and means were granted me, I would one day enjoy a like treasure and afford to others the happiness I then enjoyed.

It is but a few years, since there was much taste manifested for fruits and flowers in this part of our State. I cannot call to mind a solitary garden, until within thirty years, where a greenhouse or a grapery could be found, or where you could find a pear orchard. Apple-trees have always been abundant, and cider a favorite beverage from time immemorial. We have now in various parts of our county many thrifty and flourishing pear orchards, and in many instances they are becoming a source of income to the proprietor. Almost every family is desirous of planting a few fruit-trees as an appendage to the dwelling. Many persons are turning their attention to the cultivation of grapes, with much promise.

I could speak of the success which has attended the cultivation of peaches, and any man, at quite a small expense, can be assured of an abundant crop. My peach house for twenty years has been in successful operation, and has never failed in a single year. They are more easy to be managed and at much less expense than grapes. The quality depends, in a great measure, upon giving them free air and a genial sun.

The success which has attended the cultivation of foreign grapes is well known to many present, and as to the quality, I hope to have the pleasure of submitting that to your judgment.

On the increased prosperity of our society we soon became agitated with the question of a permanent location, which eventually led to a division, and the central society was organized. Of the wisdom of this measure I have nothing to say; but I am entirely satisfied it has promoted an increased interest in the county, and that either of the existing societies is doing more for agriculture than would have been done if the division had not occurred.

I have always found it difficult to make our capitalists realize the importance of agriculture as the foundation of our prosperity. They cannot or will not perceive the rapid growth of our country under the combined influence of agriculture and manufactures. Divorce these two great leading interests of our country, and we should soon pass back to an age of barbarism.

No community ought to feel more the importance of increasing the products of the soil, than the community where we are; it is the source of our life; from it we receive our daily bread. And yet, what encouragement is held out to that man, who by constant toil is now producing four tons of hay where formerly scarcely one was received? Or what credit would that man receive, who from apparently worthless and cast-off land, covered with rocks, snags and tussocks, should present to your view a beautiful meadow of twenty acres, destined ere long to produce fifty tons of hay? And does it not speak well for the progress of agricultural science, that in our county one man can testify that within the period of twenty years, more than forty acres of swampy, rocky land, hardly worth the name of an owner, has been brought into successful cultivation?

And perhaps nowhere has the power of example been seen and realized, how speedily it exerts its influence on some neighbors, and how readily, almost unconsciously, they are found removing those obstacles to cultivation which have remained for generations, than with us.

It cannot be denied that in our county, as well as in other parts of our Commonwealth, there has been within a short period a material advance in agricultural science, and this is exhibiting itself, not only in the drainage and clearing of land, but also in the beautifying of the grounds with fruits and flowers.

As our manufactures increase, the farmers in our vicinity will find more and more demand for those products of the earth which are essential to the support of man and beast. Hay and all kinds of vegetables will find a ready market, and here we shall see the symmetrical working of these two combined interests,—agriculture and manufactures.

As I have intimated before, we are not strictly an agricultural county; our pursuits are in other directions. And while we would not attempt to compare ourselves in this branch of business with other counties, still we think it quite evident that, taking all the branches of industry, it can be made to appear that we need not be ashamed to make an open exhibit. I propose, therefore, to allude to some of the leading interests of our part of the State.

Taking the statistics of the industry of our State, we shall find wherein Bristol County in certain industrial pursuits takes a very decided lead. The whale fishery, which has been prosecuted for so many years with such success, is in a great measure confined to our county, and more particularly to New Bedford. The aggregate value of production from this source, was six million fifty-seven thousand four hundred and sixty-nine dollars (\$6,057,469), while the whole production of the State was only \$6,618,670; showing the product of our county to be within \$516,200 of that of the whole State.

We will take another product which is nearly allied:—

Sperm, whale, lard and linseed oil—Whole product, . .		\$5,604,761 00
County of Bristol, . .		4,227,970 00
Manufacture of copper, . . .		Whole State, . . \$3,577,672 00
		County of Bristol, . . 2,295,772 00
Metal sheathing, . . .		Whole State, . . \$954,610 00
		County of Bristol, . . 601,772 00
Britannia ware, . . .		Whole State, . . \$419,033 00
		County of Bristol, . . 377,033 00
Tacks and brads, . . .		Whole State, . . \$660,516 00
		County of Bristol, . . 609,350 00
Shovels, spades, forks and hoes, . . .		Whole State, . . \$1,150,267 00
		County of Bristol, . . 1,103,550 00

You will notice in the last product referred to, almost the entire product of the State belongs to this county, at least within less than fifty thousand dollars. We might refer also to that of britannia ware. We will now sum up these seven of the leading products of the State, viz. : whale fishery ; sperm, whale, lard and linseed oil ; manufacture of copper ; metal sheathing ; britannia ware ; tacks and brads ; shovels, spades, forks and hoes ; and we shall find that they amount to the sum of fifteen millions two hundred seventy-two thousand nine hundred and twenty-one dollars, while for the whole State the amount is only \$18,985,530,—within \$3,712,609 of that of the whole State.

I can mention other products in which this county exceeds any other in the Commonwealth,—flouring mills, corks, nails, manufacture of cotton. The facts as to this last product, I trust, will be made very plainly to appear before I close my remarks on the present occasion.

I design to speak of the early history and rapid growth of our city. There are many interesting incidents connected with the original transfer of this territory by the aborigines. I could speak of the Freeman's purchase and Pocasset purchase, all embraced within the circuit of a few miles from where we are, and the paltry sum paid for them in pots and kettles ; but these noble warriors have passed away, and but few traces are left to perpetuate their memory. Their names, however, are attached to many of our noble structures, erected from the very material they once delighted to dance upon in their war songs. Among the early inhabitants of this place were the Bordens and Durfees. They were at one time (1680), almost the entire proprietors of what was called the Pocasset purchase, which included nearly the whole of the then town of Tiverton. The Bordens, as early as the year 1714, owned the lands on both sides of the stream, together with all the water power.

And it is a remarkable incident, that this most valuable water power remained unimproved (with the exception of saw-mills, grist-mills and a fulling mill), for the period of a whole century,—from 1714, the time of the purchase, until 1814, when the Troy and Fall River Companies were incorporated. The town of Fall River was set off from Freetown, February, 1803, and incorporated by the name of Fall River. The first town meeting was called by my father, Charles Durfee, April 4, 1803.

The next year (1804), the name of the town was changed to that of Troy. This name it retained for thirty years, when it was changed again to Fall River, and became a city in 1854.

In the year 1814, the time when the Troy and Fall River Companies were incorporated, there were thirty dwelling-houses and two hundred inhabitants.

In 1840, the cotton mills had increased to eight in number, in which were run 32,084 spindles and 1,042 looms, what we should say now would constitute a medium-sized mill. The population at this time had increased to 6,738.

From 1840 to 1860 the mills had increased only to eleven in number, containing 192,620 spindles and 4,576 looms, and the population had increased to 13,240.

We have the complete statistics of the cotton manufacturing of this place as published May 1, 1868, when we find twenty-four incorporated companies with a capital of \$6,405,000, 507,900 spindles, 11,500 looms; hands employed, 6,759; number of yards per annum, 114,364,000, or 64,977 miles, which would encircle the earth two and one-half times; coal, 32,482 tons; cotton, 23,273,000 pounds; oil, 47,990 gallons; starch, 636,600 pounds; pay roll, about \$200,000 per month. Population in 1867, 21,181; population in 1871, 28,000.

To the above should be added the following mills, either erected or in process of erection :—

MILLS.	Spindles.	Looms.
Wampanoag Mill,	25,584	586
Durfee Mill, No. 2,	47,104	1,073
Stafford Mill,	84,928	780
Slade Mill,	31,480	704
Davol Mill, No. 2,	16,688	287
King Philip Mill,	32,686	582
Weetamoe Mill,	32,016	732
Narragansett Mill,	25,000	320
Granite Mill, No. 2,	44,672	984
Merchants' Mill (additional),	32,076	644
Osborne Mill,	30,000	720
Montaup Mill,	20,000	480
Chace Mill,	40,000	950
Borden Mill,	50,000	1,200
Tecumseh Mill, No. 2,	22,000	500
Crescent Mill,	25,000	600
Fifteen new mills, containing	509,232	11,072

Recapitulation from Statistics of 1868, May 1st.

24 mills.	507,900 spindles.	11,500 looms.
15 “	509,232 “	11,072 “
89 mills.	1,017,132 spindles.	22,572 looms.

Assuming that the fifteen mills in process of erection will cost per spindle about the same as the twenty-four already in successful operation, we shall have a capital of about thirteen millions employed in the cotton manufacture. Six other mills not fully decided upon, will probably be erected during the coming year.

The question will naturally arise, and has been often asked, Whence this large capital? Surely not accumulated fortune from abroad has wrought these wonderful changes; it has all been accomplished by the silent, irresistible force of muscle and brain, which never fail in whatever they attempt.

From the commencement of what has now become such a wide-spread and unsurpassed extension of business, it has been a home work. We have had some among us who have matured their plans, and then, in a quiet and intelligent manner, bent all their energies in their prosecution; always adopting the motto, *never fail*.

I will cite, for instance, the Fall River Iron Works Company, which commenced its operation in 1821.

Eight individuals of limited means formed a joint-stock company, fixing their capital at \$24,000, dividing their stock into thirty-two shares, at \$750 each, equally between the eight owners. They commenced business in 1822; their first assessment was twenty-five dollars on the share, at which time two of their number received appointments, one as agent and the other as an associate agent, with a salary to each of \$1.25 per day. We have no record of any change of salary until 1839, seventeen years. In 1825, the first meeting of which we have any record, they were organized, and became incorporated, with a capital of \$200,000. At a meeting in 1828, certificates of stock were issued. In 1831, three of the original stockholders had retired, having sold their stock to their associates at cost and interest.

In 1833, Richard Borden, agent, was instructed to build suitable buildings for the purpose of printing calico.

In 1837, September 12, Holder Borden deceased at the early age of thirty-eight years. He was the leading agent in all these contemplated plans, and it was by his advice that this lately organized company embarked in the extensive business of calico-printing. Although the youngest of the eight, he was the first to fall; but he has left his mark upon the enterprises of this city which time can never efface, and his mantle has fallen upon others. One only remains of the noble eight; he yet stands among us as a wise counsellor and a safe guide.

In 1845, January 29, the Iron Works Company obtained a special Act to manufacture cotton cloth and prints, with a capital of \$1,000,000.

June 9, 1845, the company made its first dividend, it being two hundred and fifty shares in the Fall River Branch Railroad. The Metacomet mill, of about 24,000 spindles, is the profits, in twenty-four years from organization, of the Iron Works.

You have this corporation, which commenced its existence in 1821, now presented to you in its limited operations, having extended its means to found another corporation, the American Print Works, with a capital of \$360,000, printing 56,250,000 yards per annum; using \$600,000 worth of madder and garancin, and \$400,000 worth of other drugs and dyes; consuming 18,000 tons of coal, and employing 900 hands. The value of its annual production is \$5,000,000.

Thus, gentlemen, I have presented to you in a very imperfect manner some of the features of the agricultural interests of our county; also our relative position in industrial pursuits; and lastly, in a brief sketch, the great leading interest of this part of our State; and happy shall I be if, in my remarks, I have said anything which will show this subject more clearly, and bind together more strongly these two great leading interests of our country, Agriculture and Manufactures.

The Board then adjourned to two o'clock.

AFTERNOON SESSION.

The Chairman announced that the subject for discussion was

THE PREPARATION AND SEEDING DOWN OF LAND.

Mr. JOHNSON, of Framingham. It will be remembered by you all, that at the annual meeting in Boston last year, I presented a report upon the time of cutting and the mode of curing hay; and as it seems to me important that that subject should come first in this discussion, I may be permitted to say a word or two upon it.

By the statistics, I find that the neat stock of this country is increasing at a greater ratio than the grass; not that the grass crop is falling off particularly, with the exception of the last two years, but the neat stock is increasing rapidly. Now, it is essential that we should have the grass, or something to take the place of that grass or hay, to keep up our stock. In 1865, the value of the hay in the Commonwealth was nearly \$14,000,000; and if to that be added the value of the grass in our pastures, it exceeded all the other agricultural products of the Commonwealth, showing that the grass crop is the most important crop that the farmer can raise. Hence the necessity of thorough preparation of our land for the reception of the seed of all the varieties of grasses both for mowing and pasture land.

Now, gentlemen, at the time the report to which I have referred was made, it was thought by some that the Board were responsible for it. For what I say to-day in regard to the hay crop, I am individually responsible; and I will repeat what appeared in the original report, that if the grass were cut at the proper time, and cured in the proper manner, there would be millions of dollars saved to the farmers of the Commonwealth in hay; because, if there are \$14,000,000 of hay cut annually in the State, and if, as I believe, from the experiments I have made, hay that is cut at the proper time, and dried just enough to keep,—which will be done in three or four hours,—is worth one-sixth more than hay which is dried as it was when I was a boy, you will see at once that there is a great inducement to cut and cure our hay properly, as I consider it.

The first thing which a farmer must do in order to increase his hay crop is, to look to his manure. We cannot prepare the ground for seed properly unless the manure heap is cared for. That is the first thing. Then it is important that we should plough our ground properly, that it may be in a suitable condition to receive the manure and seed. If the ground is not ploughed to the depth of seven or eight inches, possibly nine, we cannot get a surface cultivation so thorough that the roots will not be liable to dry up. We cannot get mould enough (to use that term) by shallow ploughing, to insure our crop against the dry seasons of our New England climate. And it is also essential, as every farmer well knows, that we should have a proper quantity of manure, in order that the sod may have plenty of food, and that we may have a paying crop of grass. It does not pay, in Massachusetts, to mow ground where we do not get more than ten or fifteen hundred pounds of hay to the acre, high as labor is now. I should say, that on most soils, about fourteen cords of compost manure should be applied to the acre in planting the ordinary farm crops preparatory to seeding our grass lands.

There is a great difference in the kind of plough which we use for cultivation. I have used various kinds of ploughs, and while I do not intend to give the preference to any kind here,—for there may be plough manufacturers present, for aught I know,—I will say, see to it that you plough the land in such a way that it leaves the centre of the sod a little like the back of your hand. Don't plough until the land is dry enough to work light and pliable. I think a great deal of injury is done to the crop by ploughing early in the spring. Never plough until the soil is ready for it. Better plough in June and plant in June, than to plough and plant before the soil is dry enough, as I have said, to work easy, light and pliable. I would be cautious about the plough that I used, as that is very important. We all know, that it requires a longer time to prepare the land to receive the manure and seed, when we use one kind of plough, than it does when we use another kind.

After I have ploughed I use a roller, or an old-fashioned bush harrow, so that all the little spaces may be filled, and that the manure, when it is applied, may be spread evenly all over the surface. After it has been thoroughly harrowed or cultivated

with the cultivator or horse-hoe it is fitted (the manure having been put on) to be marked out and the crop planted. Then it becomes necessary again, in order that the ground may be in a proper state for seeding next year, that attention should be paid to keeping it free from weeds. Some farmers this last year thought, when they had hoed their corn once, or put the cultivator through two or three times, that they had done all that was necessary; the consequence was, the ground was full of weeds, and they had a small crop; and next spring, when they come to seed, we all know that the ground will not be in proper condition to receive that seed.

Ground that has been planted and is to be seeded the following spring should be ploughed in the fall, after the crop has been removed, that it may receive the action of the frosts, and be better prepared for the spring seeding. Again, the stones should all be removed; or, in preference to that, I would recommend that they be sunk in the ground, unless it is very stony and gravelly. Stones are no disadvantage to a crop. Under this plan, when it comes spring, our work is simply to go forward and replough two or three inches less in depth than when we turned over the sod. That is my opinion. I am not laying down any particular rules, but I hope you will all try this. I would plough about three inches less than I ploughed in the spring when I turned over the sod, because I think it best that the sod should remain at the bottom for the present. Then my practice is, to go over the ground with a harrow. After the harrow, I put on a one-horse plough, going about three inches deep. Plough it fine, and if grain is to be sown (and I would recommend sowing grain in the spring for the benefit of the grass seed), sow upon the furrow, harrow, sow grass seeds, bush and roll. That prepares the ground, so that it is all ready for the mowing machine to pass over. A pair of horses may trot over that ground, and you do not dull or break your knives. It is all ready for the horse-rake to follow, and that goes smoothly, and is not so liable to injure the grass roots as where the ground is left in an uneven state. I have thought many times that the spring-tooth horse-rake is very injurious to the crop of grass the year following, for the reason that it breaks off a great many of the roots of the grass, especially of herdsgrass. It breaks off the little bulb of the herdsgrass, and when

that bulb is broken off, you get no more grass from that root. Therefore, although I am in favor of about all the agricultural tools now in use, I am inclined to object a little to the horse-rake. I think we may find some machine to rake our hay that is better than the spring-tooth horse-rake, although I have used one for many years.

Now, if we plough our ground slightly, cultivate it slightly with a harrow, give it no pulverization, plant it, hoe it carelessly, and then seed it down, when we come to mow, the knives of the machine are dulled by the dirt and broken by the stones, the teeth of the horse-rake scratch up the dirt with the hay, and it is rolled over and over in the winrows, and gives us just what we don't want in our hay. It wears the teeth of the cattle, and is a dirty mess to feed, and they don't relish the hay as well as they do good, nice, clean hay, well cured, and cut early.

For mowing, I should not recommend the early grasses to be mixed with the late. If not mixed, the grasses usually sown will be in blossom very nearly at the same time, and you can cut and cure your hay so that there will be no loss on either kind of grass; whereas, if you mix the early and late grasses, when the late are fit to cut, of course, the early will be in too advanced a state to make the best hay. But for pastures, I should decidedly recommend a mixture of the early and late grasses, and quite a number of varieties, as the early will come forward and mature before the others, which will come in in their turn, and thus the cattle will have later pasturage than the early or late grasses alone could afford.

I think a great mistake is many times made by covering the seed too deep. Many farmers harrow their seed in, and a great deal of it never germinates. I would recommend the covering of grass seed as lightly as possible, never using a harrow to put in the seed. The object of farmers should be to obtain the greatest income from their lands with the least amount of labor. Now, the question is, In what way can we do that? There is no doubt in my mind that the grass crop is the most profitable crop that we can grow in the eastern part of Massachusetts, at least, except in the immediate vicinity of our cities, where market gardening would pay best, and to get that grass crop at the least amount of labor should become our object. But it cannot

be done by planting in the spring, with corn and potatoes, and the common field crops. We should make a change in our mode of farming; and may it not be made, in some degree, by seeding down our lands in the fall, and especially as we have had two years of very dry weather, making our old fields almost barren? There are many fields, acres upon acres, in Framingham, that are covered with wormwood, and not a root of grass apparently left. I have noticed the same thing existing in different parts of the State. We cannot afford to wait for all this land to be ploughed and planted and re-seeded according to the usual process; it takes too long; too much of it would be waste. We must therefore bring that land into grass in some speedier way.

Now, there are many acres that could be re-seeded this fall, before the ground freezes up; and perhaps that is the most profitable way at the present time, to commence on the ground by ploughing and re-seeding this fall, just as the ground freezes. There is no doubt, however, that August is the proper time for seeding our grass lands. That seems to be the time when nature distributes her seeds, and I think grass seed succeeds better when sown in August, than in any other month. I should recommend seeding in August; but to do that we must hasten our haying, in order that we may prepare the manure heap, attend to the ploughing, etc.; and it is a great advantage to the farmer to get his haying all out of the way, at least by about the tenth of July. His meadows may be left a little longer, but no English grass, in my judgment, should stand later than the twelfth of July. This last year, in my section of the State, the English grass that stood later than the tenth of July, was not worth as much as that which was cut at that time. Now, in fall seeding, it is essential that we should plough pretty deep. Many farmers, for August seeding, plough shallow, manure, harrow slightly, and sow the seed, and the first thing they see is the grass starting up from the old roots; the ground becomes nubby, rough and uneven, and if the next season is dry, its yield is very small and about run out. I think the ground should be ploughed at least from seven to nine inches deep, and thoroughly pulverized, before the manure or the seed is applied. And in ploughing in August, if we cut our hay in good season, we plough in quite a heavy grass crop, which, of course, is no disadvantage

to the crop of grass that follows. The soil should be thoroughly cultivated and stirred with the harrow or cultivator, or something of that kind, until it is made perfectly fine, without bringing up the old sod. It is the same with the soil, I suppose, that it is with all sorts of drugs. We are told by the apothecary that the more we rub this or that down, the more strength we get out of it for medicine. I take it, it is just so with the soil. The more we mix it and work it, the greater will be the strength of the soil, and the greater will be the crop that we take from it. Therefore, it is important that we should follow up the plough with the cultivator or the harrow, in order that the soil may be thoroughly pulverized. The manure also must be made very fine, and allowed to decompose before applying it, so that the little roots may take hold of it readily when the grass springs up, and not be obliged to wait until that manure becomes decomposed in the soil; if they are, the plant will be weak, and the crop light.

There seems to be a proper time for ploughing, although we have got to do it as the man cut his hoop holes,—when he had an opportunity. Still, I should advise ploughing, as far as possible, when the dew is on the ground. I am aware that it will not do for the farmer to wait to plough all his ground when the dew is on; still I would advise him to plough as early in the morning as possible; and if there are any young farmers here, I say to them, depend upon it, if you plough early in the morning, you will gain in the crop, you will gain in every way during the day. I have noticed in my garden, that that portion which has been hoed or cultivated with the dew upon the ground, produces better crops than that portion which was hoed in the heat of the day; and I have no doubt it is so in the fields. In fact, if you plough a strip of land with the dew on, and another later in the day, and wait a week or ten days, and then replough, you will find a difference in the soil as you turn it over.

Clay soil should be ploughed when it is quite dry, so that it may be easily worked. If clay soil is ploughed too early in the spring, when it is wet, it will bake and become hard, and it is difficult to work it up into such a state that the roots of grass or grain can take hold of it. It must be worked, I repeat, when it is dry; if not, it will be full of little lumps, which will

he will grow rich. Any farmer can well afford to give his land thorough culture and a liberal dressing, but we must not undertake to do too much in a season. Labor is quite an item at the present time; it is both high and poor. The fact is, the laborer has become master; the employer must be the servant in most instances. I have usually called upon my help mornings, and I must say, some of them have not been the pleasantest looking men I have seen, when they made their appearance, although I had made them a pleasant call. I believe in commencing work early in the morning, and leaving early at evening.

Some farmers have bog meadows, which have been worked to some extent, and such land produces well when thoroughly reclaimed, but it takes a great amount of labor to do it, and to do it in that way (as the saying is) that it will stay done. The process is, as you all know, by ditching, draining, burning, etc., and if top-dressed once in two years after seeding, it makes the very best of grass land. Then we have certain kinds of wet ground which is very full of rocks and stones, and cannot well be ploughed. In some instances, we have used the spade,—a common, narrow Irish spade. I know that it is expensive, but I had, and have now, some land which needs the spade; it is about impossible to plough it. I spaded two and a half acres of that ground, at an expense of \$42.50 an acre; the land cost me \$45 an acre; and the first year I cut 5,995 pounds of hay to the acre. I don't remember what hay was worth at that time, but it more than paid the expense. Certainly it will pay to spade these rough pieces of land that cannot be very readily ploughed, if the soil is good.

It is true that farmers are obliged to live rather short and work pretty hard, but many of them acquire a good property. The farm is really the farmer's bank, where he makes his deposits, and it is done with the strictest economy, and the very hardest of labor. I remember reading, a few years ago, of a gentleman in Middlesex County who had fifty apple-trees to set out, and being called away on the day he desired to have his trees set, he directed his gardener to go to work and put them out. When the gentleman came home, he found that the man had set out only ten trees, and complained because he had done so little. The next day, he worked with his gardener,

and they set out all the rest—forty trees. Ten years afterwards, he stated publicly that those ten trees that the gardener set out that day were worth ten times as much as the forty trees he set out in one day. This is but an illustration, gentlemen, of the fact, that it is by care and attention to the products of the soil that we can hope to realize satisfactory and profitable results. If we wish to make men and women of our children, we must give them care and attention in their childhood, and bring them along step by step as they increase in years. But, gentlemen, I see before me some men of high culture, and this part of the subject I shall of course leave to them.

With these remarks I leave the discussion to others more able than myself.

Mr. GOODMAN. I merely rise to say that Col. WARING, of Newport, whose name appears on the programme for to-morrow, to open the discussion on Farm and Garden Vegetables, supposed, through some misunderstanding, that he was to speak to-day, and is present. As he will not be able to be here to-morrow, I hope that we shall have an opportunity to hear him now.

Mr. SLADE. I move that Col. WARING be invited to address the Board at this time. Carried.

Col. GEO. E. WARING, Jr., of Ogden Farm, Newport, R. I. I have listened with much interest to the remarks of the gentleman who has preceded me, on the subject of the preparation of land for grass; and although my intention had been to speak on the subject of the cultivation of garden vegetables as a farm crop,—a most important branch of the industry of this neighborhood,—I think I may be allowed to vary my plan, and to speak also on the question of the preparation of land, not only for grass, but for all crops.

Dickens has said, that that part of the farmer's holding which pays the best for cultivation is the estate which lies within the ring fence of his own skull; and it seems to me, not only that each of us may, in our own operations, derive, in the end, the greatest profit from the cultivation of our own minds, as business men and as farmers, who intend to make use of our best faculties in carrying on the operations connected with our business, but that, as a Board of Agriculture, you, gentlemen, will do more good to the agricultural interests of the State of

Massachusetts, if you give that direction to your efforts, more, perhaps, than you have hitherto done, than if you confine yourselves simply to the promulgation of recipes for doing certain kinds of work. To my mind, what New England agriculture especially needs is not so much to know when, and how, and what it shall plant, as to know *why* it plants, how what it plants grows, &c., in what manner it may be made to grow better, to grow with the least injury to the soil, most in conformity with the needs of the community, and therefore the most profitable.

I am an unmitigated high farmer ; if I were not, I would go West ; I would go to some place where labor is worth two and a half or three dollars a day, and where land can be bought for a dollar an acre, where an immense amount of skinning could be done, and a certain profit would accrue, without reference to the condition in which I might leave the land. That is not my view. I do not believe that that sort of cultivation will, in the end, give me more money, more comfort, more satisfaction, and certainly not more intelligence. I believe that the best field in America for any intelligent farmer is right here in New England, close by great communities, who must be fed with crops brought from long distances, and where intelligent men, who come in advance of the high cultivation that is sure to follow in a few years, will get the benefit of the very high prices. As an instance, it is a part of my business to grow cabbages, and this city of Fall River is one of my principal markets. Fall River is supplied with cabbages that come from New Jersey. The men who grow them there grow them very intelligently, spend an immense amount of money in preparing their land, and make a great deal of money by it. Before they sell their cabbages, they must load them on their wagons, carry them across the river, paying ferriage, deliver them to the commission merchant, who stores them away in his place, paying for the unloading and stacking up. The commission merchant charges a commission of $12\frac{1}{2}$ per cent. for the sale. He sells them to a wholesale merchant, of Providence, who pays cartage and freight, and cartage again, to get them to his own store, barrels them up, carts them to the "Bradford Durfee," which takes them to Fall River ; and here they are sold to a dealer. That dealer will gladly give me the same price for cabbages, out of my own wagon, that he gives for those delivered from the boat. So that

I get not only as much money for my crop as the Jersey man—that is, a fair profit on the cost of raising the article, for no staple article is ever grown many years below the cost of raising it,—but I get the commission of the New York man, the commission of the Providence man, the cost of transportation from New Jersey to New York, from New York to Providence, and from Providence to Fall River, all of which amounts to a very considerable sum,—more, I think, on the average, than the original cost of the cabbages in New Jersey.

This is only one instance. The same thing is true of hay, although hay, as a general thing, is not brought so far, and the cost of transportation is not so great. But hay is worth much more here than in Vermont, where the demand for it is limited. The great demand for hay is to feed the horses that are used in our large towns. So I believe that we should start with that leading principle, that the agriculture of New England, before it reaches its perfection, or anything approaching its perfection, must deal directly with the problem: to raise, not what can be as cheaply and easily brought from the far West, or from any remote district, but what can only be raised right here, or what, being raised here, will save an excessive cost of transportation from long distances; that is to say, something the price of which is regulated by the cost of transportation. I remember that, in 1852, I delivered an address before an agricultural society in the north-eastern part of Maine, 165 miles north-east of Bangor. The land was easily cultivated, very rich, from the burning of the timber that had been cut down in clearing it. The great demand in that immediate vicinity was for food for the lumbermen and the lumbermen's teams; and wheat, of which they were producing regularly about forty bushels to the acre, was worth the price of wheat in Bangor, and that is Western wheat, brought from Ohio and Western New York, with the cost of 165 miles of wagon-hauling in addition; so that, when it was \$1.40 in Bangor, it was selling in Aroostook for \$2.50. The men who grew wheat in that vicinity, therefore, received an extra profit of \$1.10 a bushel, from their position.

Such instances as these may be found here and there all through the country; but, as a general rule, if we go out of the very small circle of what we may call "high farmers," or "fancy farmers," if you please, we find every one growing here

precisely what is grown elsewhere. When I commenced farming in New England, I followed the beaten track. I commenced growing corn, and continued it until I convinced myself thoroughly, that although I could produce from 75 to 85 bushels to the acre, without any very unusual outlay, where the soil is good, I could buy that corn much cheaper than I could produce it. That is to say, the same amount of labor that is expended upon a field of corn, and which absolutely must be expended, if we would get a good crop, will pay very much better if expended in the raising of cabbages or roots. I do not mean to say that it will not pay, ordinarily, to raise corn, but I say that it will pay so much better to raise other things, that we had better, in my opinion, leave corn, as we leave wheat, to those who have more land, smoother fields, and greater facilities for the use of machinery, and devote our land, and especially our manure, to producing that which will pay us more money.

Precisely how the impression is to be produced among New England farmers generally, that they must cultivate in a better way, cultivate more thoroughly, cultivate for better results, it is difficult to say, for there are prejudices among them which, as all who have encountered them know, it is very difficult to remove. I do not believe that anything very effective can be done except by example. We must get certain men, here and there, to do at least a small amount of work in the way that we believe to be best, and by the example of these specimens of good cultivation on a small scale, produce an impression that may have a lasting effect upon the community; for the moment we show that there is a profit in any transaction, that moment we have started a movement that will never stop. Our neighbors may scoff at our processes when we first introduce them; and if they fail (as perhaps they may), they will continue their scoffing; but if they succeed, there is an end to all objection. However stolid they may have been in opposition, they will not only accept the suggestion and follow it out most carefully, but they will firmly believe, themselves, that they have done it all their lives.

Probably nothing better can be done to produce the effect that I speak of than to secure a perfectly good seeding down of land to grass. Any intelligent farmer will appreciate the fact that land that will produce two and a half tons of hay to the

acre, is worth almost any amount of labor or care or money that it may have cost. There is living in my neighborhood, a farmer who has made his own way in the world, who was born and brought up upon a farm, who is not a rich man, by any means, although he has a little money in the bank, who paid \$377 an acre for four acres of land in grass, four or five years ago. From that time to this, that land has never been ploughed, nor had anything done to it, except that he has kept it well top-dressed with seaweed, and he told me the other day that it was one of the best investments he ever made, for notwithstanding the high price, the crop of grass was so good, it always gave him satisfactory interest for his money. Now, the secret of the fertility of that field lies simply in the fact, that it was for many years an onion patch. It was thoroughly cultivated, and so put into a condition that it will never forget. So long as it receives a sufficient top-dressing, it will probably remain in grass year after year. Now, what we want to know is, how to make all land on which we produce grass, onion fields. It does not cost much. If we cannot take the land in its present condition and cultivate it and manure it, simply for the sake of the grass, let us put it into some crop that will pay for more thorough cultivation and manuring, and bring it in the end into a condition where it will produce two and a half tons of hay to the acre. I believe much more is possible, on good land, but that is enough for a good profit.

In commencing the preparation of land in this way, no matter whether our intention is to plough it and seed it directly and bring it into condition by the use of manure, or to improve it gradually by a long period of cultivation, the first thing we must look to is draining the land; and as the time is short, I will confine myself entirely to this branch of the subject. Everything else connected with it you all of you sufficiently understand: the importance of manure, the importance of thorough cleanliness, and all that. But it seems to me that farmers generally, not only in New England but throughout the country, fail to appreciate the necessity for thorough underdraining, and do not know exactly how underdraining should be done to secure the best results. There is one almost insuperable objection to this method of improvement, and that is, its very great cost. But the reason why it is so expensive,—

not much less than \$100 an acre; \$85 according to my experience, if the work is done well,—is because so little of it is done. The tiles must be brought from a long distance, and obtained of a man who sells so few that he is obliged to ask a high profit on what he does sell. Then the ditching must be done by men who are not accustomed to the work, with very common tools, and they make the ditch a foot wide at the bottom, when three or four inches is all that is necessary. All these things conspire to make the cost \$85 an acre, where it ought not to be over \$35 or \$40. But notwithstanding its high cost, wherever draining is necessary, I conceive it to be unprofitable to cultivate the land without it. I have on my own farm, over thirteen miles of drains, four feet deep. Those, I am sorry to say, cost from 85 cents to \$1 a rod. But it is a most important and necessary improvement. No matter how rich your land may be, it cannot make use of the riches that it contained originally, or that you have put into it, unless it is in a condition to admit the air, and to allow it to attain a certain temperature, so that vegetable growth can go on without being disturbed. If your crops are to be choked off by water until June, when they might commence their growth early in May, you lose not only the time when the crops might have been growing, but you lose the advantage of early maturing your crops, getting them out of the way of frost, and getting your grass ready to be cut in good season, which comes from the free and ready admission of atmospheric air, and from the absence of evaporation of water from the surface, which retards the growth of the plant, and holds everything, even the chemical processes of the soil, in material check.

There are two or three things in connection with drainage which, if they were better understood, would perhaps tend to a more rapid extension of the improvement. One is, that a very small pipe will discharge a large amount of water. I am frequently appealed to by people living in my neighborhood, to know where they can get a certain amount of tiles, three, four, five, or even six inches in diameter, to lay a few hundred feet of drain. It generally results in their going away and ordering tiles 1½ inches in diameter. In draining an acre of land, no matter how wet it is, if it is wet only from the water that falls on the surface, and not from springs flowing into it from the

adjacent ground, a tile $1\frac{1}{4}$ inches in diameter is sufficient to make it entirely dry. Not only that, but very rarely will more than half of that be filled. Tiles $1\frac{1}{4}$ inches in diameter can be bought for $2\frac{1}{2}$ cents a foot, while tiles three inches in diameter cost three times as much, including the expense of transportation to the land. Here is a difference at once, of at least \$20 an acre, in draining an ordinary field.

Then in the matter of digging. Farmers think they must begin by ploughing as deep as they can. A man thinks he has made a great advance if he can plough down a foot and a half deep, and throw all that depth of dirt out by horse power. Then the man who digs the drain must have a wide shovel, and there must be room for him to stand in, and to change his position, if he gets tired, and it results in throwing out great blocks of earth, when perhaps little slices would answer the purpose; throwing out three or four times as much as is necessary, and at a very great cost. The spade leaves a clean, firm bank. The plough a ragged and crumbling one.

Another point where failure is often made is, in the direction that is given to drains. That seems to be a thing in which the human mind is most perversely set in the wrong direction. Ninety-nine out of a hundred, even of those who have given some thought to the subject, if asked to lay the drains on a piece of land, will run them diagonally down the hill so as to catch the water, as they suppose, as it comes down, and carry it off. That is exactly wrong, for the reason that the drains that are to be laid are only pipes that leak at the joints. The water gets into them by coming in at the joints. They are as open on the lower side as they are on the upper side; the water leaks in at one joint, runs along to the next, and then perhaps leaks out. The object should be to get it into the pipe, and offer it an inducement to go out, give it no chance to run in any other direction. It is as impossible to catch the water by laying a drain along a side hill, as it is to catch the water running down a piazza roof by setting up a loose-fitting board; it will run along the board until it finds a chance to get under it, and then it will run on down the roof. A drain should be run *directly up and down the slope*, so that the moment the water gets into it, it will have no course but to follow it to the end. That would be a very simple thing, if all lands sloped in one direction; if there

were no irregular undulations. Of course, it is impossible, in an irregular field, to have the drains run directly down the slope, and at the same time be parallel to each other, which would be the most economical. Drains will work to the best advantage at a certain distance from each other, and the moment we vary the parallel direction, we either draw them too far apart, and have incomplete work, or crowd them too near together, and make the work more costly than is necessary. Consequently, there must be judgment used in laying out a system of drains, to make such a compromise between the up and down hill slope and the parallel lines we desire to have, as shall best accomplish the purpose, without being too expensive.

Of course, in laying a drain, the great point is the question of outlet. Unless we have a good free outlet, from which the water discharges in the open air, not backed up by a stream nor by an irregularity of the ground, there is great uncertainty as to the permanence of our drains. There must be a free flow, so that the silt that is washed into the drain shall be immediately carried away. The outlet being a good one, and the line for the main drain being run along at the foot of the hill, so as to have a sufficient fall,—and by sufficient, I mean six inches in a hundred feet,—and then short drains being laid to lead all the water into the main drain, and have it run freely to the outlet, we are in a position to have the work properly done at reasonable cost; and, if we can get our tiles without difficulty, we may do a sensible, a useful and economical job.

One mistake that is frequently made is, in neglecting to lay a main drain, each drain being allowed to discharge either into an open ditch or out of the side of the hill, so that along the hill-side there are instead of one outlet, twenty outlets, that play the mischief with the drains. They need the utmost care and attention. They afford ready means of access to field-mice and other animals, which get into the pipes and sometimes stop them up. Our work may be very much injured if we do not take care of each outlet; and if we count the cost of a main drain, connecting the laterals, and carrying off all the water to one point, we shall find that the expense will be very small compared with the labor that it will be necessary to give, when no such main drain is provided.

The plan of drainage having been made, the next thing to

do is to secure the tiles. That, of course, is simply a commercial matter, in which no advice from me is necessary.

The next thing is, to prepare for the digging of the drains. And here considerable improvement over the usual methods may very easily be made. In the first place, the idea that a plough must be used is a fallacy; it does not help, it retards the work. It leaves a ragged edge, throws out a great mass of earth, and leaves it in such a way that it is likely to fall back and trouble the drainers afterwards. It commences the drain with a width of two feet, when a width of a foot, or thirteen or fourteen inches, at the outside, would be ample, and we have a crumbling, loose edge, instead of the clean edge that a good drainer always leaves directly at the side of his ditch. Of course, the diggers must be Irishmen, and they must be men who, having been "draining all their lives," will be determined to do it in their own way. But it is much better that they should not be allowed to do it in their own way. They will tell you that they will do the work for so much a rod; and the price may seem reasonable; but it is very much better to hire them by the day, while teaching them to use the new tools, for the work can be done much better and more cheaply with these. I refer to the narrow draining-spade which you have probably all seen. I am doing some draining for a near neighbor, with a gang of experienced men, at sixty-five cents a rod, for a three and a half ($3\frac{1}{2}$) feet drain, and I am satisfied they are making \$4 a day. The reason why they make that is because I cannot get ordinary workmen to do the same work any cheaper. If I hire ordinary diggers, they will earn \$1.75 or \$2 a day, but the work will not be done so well nor so quickly. These men have learned how to use the tools, for they have used them for years. Their first operation is to take the broader of these spades, which is five inches wide at the point, and seven or eight inches wide at the top, and this they drive directly into the ground, to the depth of about fourteen inches, and take out the sod, which shows the round or scooped form of the spade, each end being four or five inches square. This is taken out with a twist, and laid on the bank, with the grass end, not directly against the edge of the ditch, but a short distance removed, which makes a good protection for the earth which is thrown out afterwards, which slides over directly behind it. When they have gone to a depth

which, with the crumbling at the bottom, is about thirteen or fourteen inches, they take a narrower spade and work in the same way, taking out about a spade and a half, lapping a little at each cut, and throwing the dirt over behind the other. Then they are down two feet and a half, and that is usually the lowest point to which their feet go. Then they do the rest of the work with a scoop. They have a long, goose-necked scoop, which is quite heavy and well-balanced, so that by giving it a throw, it may be struck in five or six inches deep. The men continually work backward so that they cut away the ground on which they stand, and when they get to the full depth, the finished bottom is a foot or a foot and a half below where the workmen stand. This work is not difficult, and the saving is so great that I am satisfied that the cubic capacity of the earth removed by a skilled workman with the proper tools, is not more than one-half what a common workman would take out with a common spade, in making a drain of a given length and depth.

Now, what we need is to do so much draining that the number of skilled workmen will increase to such an extent as to create a competition, and then we can get our drains laid for forty cents a rod, instead of sixty-five; perhaps for less. One man, a Canadian Irishman, who has worked for me, and who had learned his trade in Canada, told me one winter he worked in the public park at Hartford, and averaged \$6.50 a day, right by the side of the men who were regulating the price,—common Irish laborers, who were ditching in the ordinary way.

The ditch having been excavated with this scoop of which I told you, is immediately graded with the same instrument. As he takes out the last earth, the man carefully smooths the bottom, before he gets too far back to reach it, and brings it to a perfectly uniform grade. Then, when he gets through this part of the work, he lays the tile in it, not by getting down into the drain, and breaking his back in trying to get the tile in its proper place, but he puts a collar on the end of the tile, and then inserts a long-handled iron tile-layer into the collar and lowers the pair to their place, withdraws the iron, takes up another tile, lowers it, inserts it into the collar of the one already in position, withdraws his iron again, and so he goes on, step by step, without disturbing the regularity of the bottom.

Now he does—what? The most important of all things, after great care in laying the tile, is to pack them securely. He puts directly upon the tile the finest, most compact, most clayey soil that he can find, without a particle of vegetable matter,—no grass, no straw, no shavings, no leaves, no anything, except this hard, clayey soil, which is put on to the depth of seven or eight inches, and then gently beaten, to fix it in its place, and make a perfect matrix round the tile, holding it perfectly tight. I believe that one operation has more to do with the permanence of a well-laid tile drain than any other one part of the work. It is very natural to think that if we put a pipe into the ground, we must put some porous material over it, to enable the water to pass through to the tile; so we throw over it brush, or leaves, or something of that kind. That is not the way the water gets into the drain at all; it comes up from below; and in putting this porous material over the tile, the chief end we accomplish is to put there a mass of organic matter, that is sure to decompose and form a fine mould, which will be carried, by the little water which comes trickling from above, into the tiles, and perhaps choke them up, by accumulating at one point or another.

I have said that the water gets into the tiles from below. This idea may possibly be new to some of you, but it is one which is very well established. In a dry season, when it has not rained for several weeks, the soil is dry, not only down to the level of the drain, but for a considerable distance below it. The water table has settled down so that the water level in the wells is perhaps ten feet below the surface. There comes a heavy rain. Now, when the water falls upon the ground, it has no instinct to teach it that there is a drain in a certain direction into which it may get and be carried away; it will simply follow the law of gravitation, and descend into the soil until it strikes the water table, and if the rain continues, the water table rises nearer and nearer the surface, until finally it rises to the height of the bottom of the tiles, and then, as if it had risen to the top of a drain, where it would run over, it runs into the drains and escapes. In my opinion, the idea that water ever, for any considerable distance, travels laterally to find a drain is quite a fallacious one. It is a natural one, but it is a fallacy. It is one that will not hold water.

Dr. DUFFEE. How near together do you lay these drains?

Col. WARING. Those I am laying now are forty feet apart. Perhaps that is a little further apart than they had better be laid, with a depth of $3\frac{1}{2}$ feet; but on figuring up the cost, as I have to do, I found that was as near together as I could afford to lay them. The rule, so far as there can be a rule for anything about which so little is known, is to put drains that are four feet deep forty feet apart; if made more shallow, as I think they may be, with profit, they should be placed nearer together. The custom in some parts of England, in heavy clay lands, is to make the drains three feet deep and twenty-one feet apart.

• It would take too long to discuss the reasons why draining is necessary, and besides, in my experience, I have never found that any amount of discussion as to the reasons why it was necessary was effective. The only thing that farmers want to know about draining is whether it will pay, and if they find that it does, reasons seem to have very little to do with the adoption of the process. I am satisfied, that if it were not for the inordinate cost of draining, if it could be done for fifty dollars an acre, even, most of the land of the island of Rhode Island that needs draining (and that is probably more than one-half of the whole), would be drained by the farmers who own the land or rent it. Of course, a majority of the land of New England does not need draining. I think it was one of the great fallacies of the early teachers of the system, that draining would not only make wet land dry, but dry land wet. Draining will enable heavy, wet land, which suffers very much in summer, to absorb moisture from the atmosphere and so resist the drought; but if a piece of land is already dry enough to have a free circulation of air through it, I doubt if it will be materially benefited by draining.

Secretary FLINT. How about the comparative cost of stone and tile drains? Many farmers cannot see the economy of using tiles, when they have plenty of stone on the land which is to be drained. Possibly the Colonel can give us some information on that point.

Col. WARING. I have no question that tiles are much cheaper, even at the high price we have to pay for them now. I have heard it stated very often, by farmers who have tried the

experiment, that they have convinced themselves, that if the stone were delivered to them free of cost, on the bank of the ditch, they would not dig a ditch large enough to accommodate them, and put them properly into it. Having the stone on the land, they would rather buy the tiles to put into the drain than to use the stone.

QUESTION. Don't you think that extravagant?

Col. WARING. No, sir, I do not; because you are obliged to make the drain a great deal larger if you lay stone in it, and your stone must be laid with some care and skill, by a man who is worth pretty good wages. I believe it would cost more to lay a drain four feet deep with stone, if the stone were delivered on the bank of the drain, than to buy the tiles for it and to lay them. The cost of the tiles, delivered in Fall River, for an acre of land, supposing the drains to be forty feet apart, would be just about \$25, an acre would require about one thousand feet—sixty rods. Those would be $1\frac{1}{4}$ inch tiles. Now, I think there are very few fields in which you could lay a stone drain of sixty rods, digging the wider ditch you would be obliged to, for \$25.

QUESTION. Supposing it is in a locality where you have to pick out a foot and a half of hard-pan to get your three feet?

Col. WARING. I don't see how you are going to get along, if you use stone, without making a wide ditch. You must have it wide enough to work in, and that means two feet at the top and a foot or more at the bottom; whereas, a man can lay a tile drain with the ditch five inches at the bottom and fifteen at the top, if it is only three feet deep.

Mr. ALLIS, of Conway. I can show the gentleman a stone drain that has been down thirty-four years, and the water runs as freely to-day as it ever did.

Col. WARING. I am not objecting to the making of stone drains. I have seen a great many good ones; but I don't believe they are any better than tile drains, and they are more expensive.

QUESTION. Suppose you have the stones on the ground?

Col. WARING. You will find it a great deal easier to cart them off and put them on the side of the road, or dig a wide and deep ditch and throw them into it, if you want to get rid of them. I have tried both methods. I will confess that I

started with the belief that the tile drain is the best and cheapest, but that belief has been strengthened by the experience I have had.

Secretary FLINT. How would it be where you are liable to come constantly, at a depth of two or three feet, in contact with large rocks, which compel you to deviate from the direct line? Would not a stone drain, in many cases of that kind, be better than a tile drain?

Col. WARING. It would be better, in many cases, to get a perfectly uniform bottom, to clear the rocks out.

Secretary FLINT. Suppose they are so large that they cannot be removed, or that you strike a ledge?

Col. WARING. Then the real floor of your drain is going to be the level of the rock, and it is no use to dig below that. Find the lowest point you can get, and then grade to that depth.

Secretary FLINT. In many cases you would want to go lower than the rock.

Col. WARING. In that case, you would have to dig a wide ditch and get them out by main force. But stones as large as a man's body, even, are not apt to interfere with a tile drain. Now and then one will crop out at the bottom of a drain, and you must get it out, even if you have to blast. But if you should take a hundred stones, as large as your body, and put them on the line of a drain within four feet of the surface, the probability is, that nine-tenths of them, at least, would be so high up that you could get your tile under them.

Mr. BENJ. BUFFINTON, of Fall River. I should like to know how you would manage coarse, gravelly soil?

Col. WARING. I should not think it would be necessary to drain such land as that. Is the land wet?

Mr. BUFFINTON. The land is wet.

Col. WARING. Can't you tap that gravel somewhere, and get the water out of it?

Mr. BUFFINTON. That is the reason I would rather drain with stone than tile; you can drain so much deeper. You can dig larger drains, and have them farther apart.

Col. WARING. The distance apart has nothing to do with the size of the drain; if you put in a very small pipe, you will draw the water off from an immense area.

Mr. S. B. PHINNEY, of Barnstable. I would ask the comparative value of stone and tile, side by side. I have used both. I commenced in Barnstable, some few years ago, upon some of the land belonging to the agricultural society there, and I found the stone cheaper than the tile. That was something like twelve years ago, and so far as the drainage to-day is concerned, it is considered better by the stone drains than the tile. Perhaps labor was somewhat cheaper at that time than it is now, but I should like to know how they compare in value.

Col. WARING. I should say that whichever kept open the longest was the most valuable. All you want of either kind of drain is to furnish an outlet for water, and the one which furnishes the most permanent outlet would be the most valuable. In the case to which you refer, perhaps the tile were of the crude kind, that were made in the early stages of the manufacture, and the probability is, they were laid by men who did not understand it, and the dirt has found its way in and obstructed the drain. A perfectly well laid pipe tile drain, with collars embedded in clay, seems to me almost as permanent as the land itself. I do not see any influences that can disturb it. They cannot be worn out by the water flowing through them; they are burned too hard for that.

Mr. JOHNSON, of Framingham. Do we understand that it takes a thousand feet of tile to lay an acre?

Col. WARING. It takes about a thousand feet to drain an acre, with drains at intervals of forty feet.

Mr. JOHNSON. You say it would cost \$25 for the tile, and that it would cost more than \$25 to lay the stone, if the ditch were dug, and the stone there by the side of the ditch?

Col. WARING. No; I mean that the stone being delivered at the side of the ditch, it would cost more than \$25 a thousand feet to make your ditch enough wider to accommodate a good stone drain, and lay the stone in it.

Mr. JOHNSON. I do not doubt that is true.

Mr. BUFFINTON. There is another thing I have thought of, and that is, whether more air could not be got into the soil by a stone drain than a tile drain?

Col. WARING. I do not think much air gets into the soil in any case, by reason of the presence of a drain. When the soil is full of water, and the water is drained away, of course air

follows it. But except immediately over a drain, I don't think there is much ventilation of the soil from it.

Mr. BUFFINTON. So far as my experience goes, over even a stone drain, the soil is more mellow than where no drain has been laid, and better crops are obtained. What is the cause?

Col. WARING. Perhaps it is more mellow merely because it has been improved by digging. I suppose crops have grown stronger there, and have sent their roots further each way, being stronger; then the decomposition of those roots makes that land richer, and enables more roots to grow there; and finally that becomes the most mellow and the richest land in the field, chiefly from the accumulation of organic matter from the decay of roots.

Mr. BUFFINTON. I have almost made up my mind, that if we work the soil and make it light, as Mr. Johnson said, as we do when we make an onion bed, it will be equal to draining it.

Col. WARING. I have no doubt of that, unless the soil is too wet to *stay* mellow.

Mr. BUFFINTON. I have thought if we would work our soil deep, and get it thoroughly mellow and light, perhaps there would be no need of draining.

Col. WARING. You cannot make an onion bed in wet land; in land that really needs draining. All the draining amounts to, is getting the land ready for making an onion bed of it. When that is done, I should not object to any amount of cultivation you choose to put upon it. We agree perfectly about that.

Mr. JOHNSON. I suppose that strong land that is underdrained, will last in grass much longer than a field that is not underdrained, with the same amount of manure.

Col. WARING. Undoubtedly. I believe that a well-drained soil, by suitable top-dressing, can be kept almost permanently in good grass. I do not believe that you can keep the best grasses many years in very wet land, no matter how much manure you put on it. They will gradually give place to wild grasses, that grow in the water. The meadows will grow up to rushes.

Secretary FLINT. In cases where drains have been laid, is it not almost a matter of necessity that the land should be subsoiled and cultivated very deep? That is to say, would there

be any advantage in draining, with ordinary cultivation between the drains.

Col. WARING. I think there would, sir. I think all of us who advocated subsoil ploughing so strenuously ten or fifteen years ago, must feel a little humiliated, in view of the fact that there are no subsoil ploughs used now. I don't believe subsoiling amounts to much. I believe you will deepen your loam more by draining than by subsoiling; and although there are undoubted benefits to be derived from subsoiling, I don't believe they are sufficient to pay for the expenditure of time and labor involved. You want to plant; you don't want to spend time in subsoiling.

Secretary FLINT. Is it not a mistake to get tiles that are too hard burned? Are not tiles that are soft-burned much better?

Col. WARING. Tiles that are soft-burned are liable to imperfections that hard-burned tiles are not, and I think it is questionable whether even glazed tiles, made perfectly impervious, are not good as others, because the joints afford ample opportunity for the water to get in. I forget the exact figures, but I think it has been shown in England that with drains laid forty feet apart, the fall of an inch of rain in an hour would be completely removed by the admission of two-thirds of a table-spoonful per minute at each of those joints, and that is a small quantity of water to leak through such a joint as you will have. The tiles I have used for the last three or four years have been entirely impervious; as much so as if glazed. I think they have answered a perfectly good purpose. They are much stronger and much more uniform in shape than soft-burned tiles. Soft tiles are apt to be bent and dented here and there, and so lessen the flow of water; but the tiles that I use, made by Boynton, of Woodbridge, N. J., are perfectly straight, pressed tiles.

Dr. LORING. The question that has been asked here, as to the difference between stone and tile drains is an interesting one, and it seems to me that it can be answered somewhat by observation, and somewhat through the experience of others. I have tile drains and stone drains on my farm. The tile drains were laid in 1857, and the stone drains were laid in 1861. There is not a stone drain open to-day; there is not a tile drain which is stopped up.

There is in Essex County a very famous farm, well known to those of us who reside in that section. It belongs to Major Poore, the Washington correspondent of the "Boston Journal," known as "Perley." He inherited the farm from his father, who spent a vast amount of money in drainage. There were no tiles then. This land was drained as early as 1815 or 1820, I should say. The field to which particular attention was paid was a large meadow of something like forty acres, through which a small rivulet trickled. Mr. Poore desired to convert it into a large grass field, and employed a Scotch drainer and ditcher to put it into condition. It was thoroughly laid with stone drains, as accurately and carefully as that experienced Scotchman could lay them. You can stand upon an adjoining hill and overlook that field, and you can see to-day the lines of those drains by the water grasses that are growing over them. I don't suppose there has been a passage for water through those ditches for more than twenty-five years. I don't believe there is in Essex County to-day, on any piece of land *that is fit to be drained* (and I am saying now really what I mean), a stone drain that is performing its service properly and well. The reasons why, every man must judge for himself.

Now, we have certain land to be drained. Perhaps Col. Waring would lay down stronger rules with regard to the draining of land than I should. I don't think so much land needs draining in this country as we suppose. I conceive, in the first place, that a bog meadow had better be let alone. Muck lands I would avoid entirely, so far as drainage is concerned. I don't think they come within the range of farming business, especially if you have three acres of muck land and two acres of high land adjoining. I would devote myself to the upland and let the muck land go. I don't think that lands that are drained by natural slopes, unless for some reason the springs are high in them, require drainage, and for that reason, I find a great many of the farms of our ancestors produced enormous crops of grass, grain and vegetables without any drainage at all. There is a great deal of natural drainage in this country. I know that the lands which Col. Waring has, and some land which I have, need drainage. They are precisely analogous to the clay lands of Scotland and England, which are so well drained there by tiles. Those are lands fit to drain. The land

which I drained in 1857, to which I have referred, is a very fair specimen of the kind of land which is usually drained in Scotland, and so, I have no doubt, is the land which Col. Waring brags so much about in Newport, of which there is not so much in this vicinity. Draining clay land with tiles is a good investment. The best lands can only be drained with tiles, because they usually lie so nearly level that the inclination of a stone drain would be insufficient to keep the drain open, even if there were no other reason for filling it up. So that I would lay it down as a rule, that the best lands to be drained are soft clay lands, and the best way to drain them is to drain them with tiles. I have no doubt that is a good rule. And when I say here, what I have often said before, that on five and a half acres, drained with tiles fourteen years ago, I raised in one season, on $4\frac{1}{4}$ acres $18\frac{1}{2}$ tons of hay, and on the remaining acre and a quarter eighteen hundred bushels of mangold wurtzels, you will see what a well-drained piece of land will produce, when filled with manure. But there are warm, loamy lands, naturally drained, within five miles of my farm, upon which I could have raised exactly such crops, without either stone or tile drains.

So that it seems to me that it is clay land only into which you can insert tiles with profit, and that is almost the only land that can be drained with especial advantage in this country. With regard to strong lands, they are clay lands, generally, and they are usually filled with stones, larger or smaller, and in that case, it would be advisable to displace the stones in the best way possible, and take it for granted that when they are gone, the water will go out also, and then they will be naturally drained, too.

I was very glad to hear the remarks of Col. Waring. I have no doubt that there is a great deal of land, near the best vegetable markets, that can be drained with tiles to a profit.

COL. WARING. The remarks of Dr. Loring lead me to say one word more, and that is, that I do not believe it will pay any farmer to drain a single acre, if he does not need that acre; if he has another acre that he can make pay better than it now does by spending the money on that.

DR. LORING. That is a good rule, which ought to be printed in large capitals at the head of every agricultural paper in the country.

Mr. BUFFINTON. That is my rule. In 1857, my father had an acre covered with stone. He wanted to clear that up, and he went to work and dug ditches eight or ten feet deep, and filled them up with those stones. There is no real outlet for the water from these ditches; but I have never seen a year when he could not get from two to two and a half tons of hay to the acre from that field, or large crops of anything else he wanted to raise. I want to know what the reason is. The water is there under that land, and at the lower end of the field, water will stand in a wet time. That is why I think the air has something to do with it. It seems to me there must be a circulation of air among those large stones. The spaces must be filled with something.

We hear a great deal said, and read a good deal in the papers, in regard to the time of cutting grass, and we are told to cut it early. I want to know when that time is; in what state the grass must be.

Mr. JOHNSON. I do not understand the gentleman as putting that question to me, particularly. If he does, I will merely say, that my opinion in regard to the proper time for cutting grass is in Mr. Flint's last Report.

Prof. CHADBOURNE. The only thing that I saw to object to in what Mr. Johnson said in regard to the time of cutting grass was, that he mentioned a certain time—about the twelfth of July. Now, according to my observation, there is a great difference in years in regard to grass, and I think if we are to adopt any rule, it should have reference to the condition of the grass, and not to a particular day of the month. I was glad to hear him make the remark that we ought not to mix early and late grass seed in sowing our mowing fields, because some grasses come so early to maturity, that if we allow the field to remain until the late grasses are ready to be cut, the early grasses will be unfit to cut; they will have gone to seed, and will be little better than shavings. So I think we should speak to that point—the condition of the grasses in regard to flowering and seeding. My opinion and belief is, that the best time to cut grass is just as it is blossoming; you might say, when it is well in blossom. The first thing a plant does is to elaborate the material for producing its seed. With some plants, a year is spent in that work. We have an instance of

that in the beet. The first year, all a beet does is to make the great reservoir, which we call the beet root, for supplying material for the seed the next year. But in the case of the grasses, the first thing for the grass to do is to elaborate the sugar, the starch, and the various materials for the perfection of the seed, and if we allow the grass to go to seed, all this material goes into the seed; and if we allow it to stand too long, the seed drops, and all or a great portion of the value of the grass is gone. Just as the blossom comes out, just as the seed begins to form, it seems to me is the time when the nutritive material which the plant furnishes is mainly in the plant, and is best distributed in the plant. That is my own opinion. I should like to hear the opinion of other gentlemen on that point.

Mr. BUFFINTON. Ten or fifteen years ago, before I commenced farming, I went over to see Col. Thompson, of New Bedford, who is my great authority as to the time for cutting hay. I went into his fields, and I said, "Colonel, how is it that you are able to mow your hay in the morning and get it into the barn in the afternoon, and have it just as nice and sweet as any hay?" He said, "I will tell you how. When I have a field that looks almost ripe, and that is green, I mow that." I said, "That is not what I want. I want to know how I shall be able to tell when to mow this piece and that." "That is easy enough to know," said he; and he went into the field and pulled up a spear of grass, squeezed it between his thumb and finger, and some greenish water came out. Then he pulled up another spear, squeezed it, and there came out a white, milky substance, and he said, "When your grass is in that condition, it is time to cut it." I want to know whether that theory is right. I have followed that rule.

Mr. JOHNSON. When I said that herdsgrass, redtop and clover, should be cut by the twelfth of July, I did not intend to be understood as fixing that as the precise date; but I do mean to be understood, that, in my opinion, no herdsgrass or redtop grown in the eastern part of Massachusetts, or say as far west of Framingham as twenty miles above Worcester, and as far east as Newton, should ever stand later than the eighth of July. I put it at the twelfth, because some seasons, as the professor has said, grass ripens a little earlier and sometimes a little

later. I have for sixteen* years got my hay into the barn the day it was cut, and before that, I tried the experiment for several years with a few loads at a time, and tried experiments with salting, with the tightness of the barn, and the packing. I think I have learned it for myself, from my own soil, from my own stock, and from my own operations. Now, if any man can show me a better lot of cows than I took to the New England show, that had been fed on my early cut and little dried hay, and show me that they had no more grain than mine have had, I will give in. If he will bring forward a pair of horses weighing two thousand seven hundred pounds, that will go from my place to Waltham, and will not vary five minutes from two hours and twenty minutes in making the sixteen miles and show no indication of the heaves, I may begin to doubt if my hay is so good as I think it is. If it brings the heaves on, I shall begin to think it is poor. I have three horses, and they are as fat as does, although they work. I have a pair of heavy horses, that weigh over two thousand seven hundred pounds, and of course they are not so fleet as some of the small horses: but one of them, in particular, will trot ten miles in an hour, and has done it a great many times, and has never got the heaves. If he had had poor, musty hay, he would have been very likely to have been troubled with the heaves. A good many horses in my neighborhood have the heaves. I don't know how they got them, but I suppose it was because they were fed with poor hay.

Three years ago this last July, a physician was at my place. He was not there by reason of any sickness, but of course he must have been a very sensible man, or he could never have been the successful physician he was; and he said that it was reported to him that I cut my hay and carted it right into the barn, without waiting for it to dry. I told him it was not so. He said he had been told that I cut it when it was half grown. I told him I cut it at the most profitable time. I took him to a field and examined it in the way this young man (Mr. Buffinton) has described, by squeezing the sap out of the grass. Then I cut a little of this grass and let it lie a very short time. "Now," said I, "see if you can find any sap in that grass." He tried it, and could not find any. Here we have the science. I am not a scientific man; I lay no claim to any science what-

ever; all I have got appertaining to science I have learned from experience; and that experience I have got from sheer necessity and nothing else. But I believe in science; I believe in God; and I believe that everything which emanates from him is Science, and that it is true. Science never lies. Anything that we see in science that is apparently erroneous is owing to our own erring minds; it is not science that errs. We cannot rely upon what is stated as being always scientific.

This grass to which I have referred was cut, a part of it, on the fifth of July; some of it stood until the fourteenth, from necessity, for want of help; and also, because, being a little timid in all these things, and neighbors and friends saying I should lose if I cut that grass, I thought I would test the matter; and I found that the grass that was cut on the fifth was much the best hay, and was worth the most money, I have no doubt; and that good doctor came to the conclusion, after looking at my hay, and seeing the grass and testing it, that the hay which was put in later would have been worth more than the cost of cutting, in addition, if it had been cut as early as the rest.

The reason I put it as late as the twelfth is, because I thought it might please some of the gentlemen here better than to put it earlier. I believe in cutting even earlier than that. I believe, as the professor says, that the time to cut grass is when it has elaborated all the different juices necessary to form the seed; not to wait until they have gone into the seed, because the moment the seed begins to form, that moment the lower part of the grass and the leaves begin to lose their value; begin to turn woody. My idea about cutting herdsgrass is that it should be cut the moment that the blossom makes its appearance. Clover I would cut as early as the second set of heads form. There are three sets of heads in red clover, and I would cut it at that time. If clover is cut in that way, there is no trouble in having it come out bright and nice. I sold a scaffold of hay this spring to the hotel keeper there, which was put in last year in pretty good season and not much dried. It weighed well, a great deal more than he expected it would, and he said it was splendid hay. At any rate, there was no must in that hay; his horses do well on it, and like it. I think the

surest test of the quality of hay in a man's barn is to look at his cattle, and see the condition they are in.

Now, I believe not only in giving animals good hay, but good care, grooming them, keeping them well bedded, and feeding them properly. I grain my cows every day in the year,—not much, but a little. They are fleshy and in good condition, and give me a good yield. I believe, too, in draining a good deal of land, if a man can possibly afford it. It would be profitable, sometimes, to do what a man cannot really afford, if he only had the means; but most of us farmers are short of the means to do with. Sometimes we could do better if we had more means.

I will merely add, that I hold to cutting grass while the dew is off, and ploughing the ground when the dew is on.

Mr. PHINNEY. This subject was before the State Board for discussion, and I remember that we gathered a great deal of information from Mr. Johnson at that time. But it seemed to me then, that as the climate of Massachusetts and New England is variable, we could not easily fix any time, within some two weeks, as the best time for cutting grass. It seems to be generally admitted, that the season in the eastern portion of the State is, some years, two weeks earlier than in the interior, so that it would seem that the individual farmer was the best judge as to the time for cutting his grass. I formed the opinion, from the discussion which took place at that time, that we could come to no conclusion as to whether the first day of July or the fifteenth of July was the best time for the cutting of grasses. I think Mr. Johnson, at that time, came somewhat to the same conclusion.

Dr. LORING. I think Prof. Chadbourne has made a statement which should be considered with a good deal of care. It seems to me that an acre of grass in the hands of a farmer should be made the most of. What he wants is to get as much nutriment from that acre as possible. I have no doubt that herdsgrass can be cut before the head is on it, cured and prepared properly, and made into very nutritious hay. But it does seem to me, that every farmer will see in a moment that that is not an economical or profitable process for him to go into. Now, every kind of grass has just so much nutriment in it. You want to get rid of the refuse, the woody fibre, and

save the sugar, starch and soluble salts, that go to make up the nutritive properties of the plants. You must do that either by allowing your grass to stand until it comes to that point where there is the most of that nutritive property in it, or you must cut it before that time comes, and let that nutritive property be generated in the grass as it is dried and put into the mow. For instance, immature grass is very deficient in the nutritive elements that I have spoken of; every chemist knows it,—and the tests which have been applied to immature plants show that they are deficient in them. Now, you can generate or create these nutritive elements by cutting and drying your grass, but of course you get much less to the acre or half acre by producing them in that way than you do by letting the plant stand until it has arrived at that point where the woody fibre is the least, and the nutritive elements of the plant are in the largest proportion.

Now, I am sure that the time when the plant has reached that point of economy to the farmer, and of the largest nutrition to the animal which consumes it, is just exactly the point of time which Prof. Chadbourne has specified; that is, the time of leaving the blossom and going into the process of creating seed, and before the process of making seed has taken up all those nutritive elements of which I have spoken, and which presented themselves in the end of the stalk of grass out of which the milk was squeezed by the thumb-nail of the experimenter. That seems to me to be a good law.

Experience shows that we cannot lay down any definite time for the cutting of grasses. We have in Essex County, in the marshes, what we call black grass, and a very useful kind of grass it is. Black grass allowed to stand until the middle of July is comparatively worthless; cut when it is just in the condition I have described, which is generally about the twenty-fourth of June, it is about as useful grass as we have. Now, in our section, the period of time when it arrives at the point which I have laid down varies very much from year to year. This last summer, it was late; the summer before last it was early. A field which some years you could cut to a profit on the fourth of July, you could not cut to a profit another year until the twelfth of July. And so it is with other grasses—clover and herdsgrass.

Now, I think that is a law which every farmer can follow with a great deal of benefit to himself. He need not go into any chemical analysis; that he cannot do; it is impossible; but he can tell when it is just going out of blossom, and if he cuts it then, he will hit the exact point of time when he will get the most nutriment for his animals out of any given piece of grass, standing upon any given piece of land. That is the rule for all grasses. You cut, for instance, a large crop of rowen, which is entirely immature. You dry it, put it into your mow, and the process of drying and packing creates in it just what nature would have created if it had been allowed to grow long enough, and the season had been long enough. But every farmer knows that it is the most unprofitable thing he can put into his animal. An animal fed on rowen will make an abundance of everything else but milk or meat. It does seem to me that a good short-horn cow could eat about half a ton in two days. You know perfectly well that she can keep at it all the time. There is no let up to it. The reason is, that the actual amount of nutrition in that grass is small, and the non-nutritious substances are so arranged that they pass right through her, and keep her mill going all the time. That is of no earthly advantage to the farmer, and it seems to me that is a thing we must avoid, and avoid entirely.

With regard to curing grass, I will not undertake to controvert what Mr. Johnson has said, because I don't know anything about it. I am afraid to cut my grass in the morning, after the dew is gone, and put it in in the afternoon. I had one curious experience, which I will relate. Black grass requires a great deal of drying. One year, I had over forty acres, and I cut it as fast as I could. It was when I was young and enthusiastic, and pitched in myself, and did a good deal of work in a day,—for me. Well, the grass was down, the weather was fine, and I thought it was dry, but the knowing ones said it wasn't. However, I said, "This hay looks well, it is in as good order as it can be, and I am going to fill my barn with this black grass,"—and I did. In about four days, I put my hand into that mow, and I had to take it out again pretty quick. I took it for granted that that black grass and the barn too would go if I did not work smart; so I had all that hay pitched on the floor, turned over, and put back again. I am

sure of this, that I had no hay of that description of which my animals consumed so much, or which seemed to do them so much good.

QUESTION. What in your opinion would that have been, if it had not been pitched over?

Dr. LORING. I don't know what it would have been, but I know I would not be so frightened again for any living thing. Mr. Johnson says that his hay is good. I have no doubt of it; but old-fashioned hay, made in the sun, is good, spends well, and goes a great ways. I do not say his does not. Perhaps both rules are right; one rule I know is; that I am satisfied of.

Now, in regard to the grasses. I have tried all of them. There are all sorts of grasses, but herdsgrass and redtop are *the* grasses; all the rest are only substitutes, in the long run, for these. You may hunt the whole catalogue over, and you will find nothing to equal them. Clover, Hungarian grass, etc., may answer as substitutes, but the best hay, the richest in nutritive qualities, that can possibly be raised on an acre of ground in New England, is hay that is made from herdsgrass or redtop, or the two combined, which is better yet. You may put your working oxen, your dairy cows, your working horses, or anything else, on to any other kind of grass, but there is nothing, in my opinion, that will come up to those two, cut and cured according to the rule suggested by Prof. Chadbourne, by which mode all the nutritive qualities of the grass, the sugar, starch and soluble salts, will be preserved, to meet the wants of the animal.

Mr. JOHNSON. I think the doctor, Prof. Chadbourne and myself agree entirely. I am very happy to find that we do agree, for I never disagreed from the doctor in my life, and I hope I never shall. I certainly shall not, if he always behaves as well as he has to-day. We all agree that the time to cut hay is at the time when it is at the highest point of nutrition. Now, I do not understand that Prof. Chadbourne lays it down as a scientific principle here that that time is when the redtop or herdsgrass is fully in blossom. I agree with the doctor that these two grasses are the most valuable ones we have. I believe that the time for cutting is just before these grasses are in full blossom.

Now, I am not scientific ; I don't claim to be scientific ; all I claim is, that a scaffold of my early cut and little cured hay, as I call it, will keep my cattle longer than hay that is so thoroughly dried as people used to dry it. Why, sir, where would this world be if there was no improvement ? Where should we be, by-and-by ? There must be improvement in cutting and curing hay as well as in growing it. I must think that some people here in our good old Commonwealth are a little behind, if they don't begin to see the improvements that are going on in the curing of hay, and particularly in the time of cutting it. Why, sir, I suppose that there are hundreds of tons of hay in Framingham that are put into the barn the same day that it is cut, and they cut very heavy crops of hay there, and cut very early. There is one man who cuts more than a hundred tons of hay, and his hay was in the barn this year before the tenth of July.

Again (and I hope the doctor will take particular notice of this), last year was one of the years in which we cut our grass early ; year before last we cut it early, and next year it will be fully as important that we cut it early, because it has been so early these last two years. We have got to give the second crop a chance to come up and grow, and give us something to start upon. August is the time for our grass to start for the next year. Very little has started this year, and I think, therefore, that we shall come pretty short next year. I advised my neighbors this year,—and many of them agreed with me,—to cut their grass rather early, with the idea that, even if we did not get so much grass as we should if we postponed cutting until later in the season, we should gain it by the grass getting a good start for next year. I am satisfied that many of us cut our hay altogether too late. And as for hay going through cattle and scouring them, as the doctor says, I have no trouble of that kind with my stock. I don't use much salt in my hay. I don't believe in salting cows very much ; a little at a time, and often. But I do believe that the proper time to cut hay is when it has the most nutritive value, so that, when it is cut and dried, it may be the nearest like green grass. It is better for our cattle, they relish it better, and certainly they are pretty good judges.

Hon. RICHARD GOODMAN, of Lenox. When you, sir, drew such a vivid picture, this morning, of the condition of Fall River, showing to what a height of wealth and prosperity it had attained through its-manufacturing industries, I felt that agriculture had sunk below an immeasurable distance. But, sir, you failed to tell us of the difference between the profits of farming and the profits of manufacturing. I felt, however, somewhat relieved, when I began to consider the subject, by this consideration: that without the assistance of the farmers and the food which they supply, your spindles would cease to run, your mills would be empty, and the prosperity of Fall River would fade, "like the baseless fabric of a vision, nor leave a rack behind." I was reminded of the story of the organist, who, whenever he spoke of his instrument, always said, "You and I." One day, while he was in the midst of his music, the organ stopped. He turned round to the boy who had been blowing and said, "Why don't you go on?" He replied "I will go on, when you say *we*."

Now, having listened to this discussion on the hay crop, I begin to feel that we can say, with some satisfaction, this hay crop is to us farmers, what manufacturing is to Fall River. And, often as we have discussed it in the Board and elsewhere, although we do not arrive at a satisfactory conclusion about it, we do get some information. One of the most interesting points of this discussion is the question of the time for cutting hay, and I think that if the chemists and scientific men would study this subject accurately, acutely and scientifically, they might arrive at the precise day when our hay should be cut; but that rule would not apply equally well to all sections of the State. Take the western part, for instance, where we have a great deal to cut. We have to begin early and cut late. It is a long while before we can get all our hay in. We cannot always cut it when it is just in blow or just going out of blow. We want some general rule on the subject. And, sir, the value of this discussion is this: that it will tend to establish some general rule which we can try to live up to. It is a remark of an acute historian, Mr. Froude, that there are some laws which must be placed upon the statute-book, not that they can be carried out, but that men may live up to them as nearly as possible. That same rule applies to the prohibitory law; it

applies to the ten commandments. We do not abolish them because we cannot live up to them, but we want to live up to them as nearly as we can.

Now, this theory of Mr. Johnson's about cutting hay and putting it in the same day, although I have never tried it myself, I think may probably be successful in practice; and so I think the rule that we must cut our grass when it is going out of blossom, and before the seeds begin to form, is a good one. It is important for us to lay down these practical rules, because we want to live up to them as closely as we can. The farmers throughout the country cannot, as a general thing, stop to analyze, and go into all these minute particulars. What they want is some general rule on which they can rely, in regard to the time of cutting their hay.

Now, in my part of the State, a good many farmers still cling to the old-fashioned notions, and they will not begin to cut their hay until all their other work is out of the way. They get mowing machines and tedders, and all the new-fashioned implements, but they think they cannot use them until the hoeing is all done; they have no idea, apparently, that it is possible to carry on two kinds of work at the same time. That policy works more harm than anything else. Those of us who are in the habit of using machines, and managing this thing properly, can carry on our hoeing with one set of machines, and our haying with another, at the same time. I noticed this year, when hay was very scarce, some of our farmers waited until after the fourth of July, until after hoeing was over, and the annual frolic over, before they cut their clover. Every one knows it is not worth one-quarter so much as it would have been, if it had been cut earlier; and not only has the farmer lost a considerable portion of a valuable crop, but he has put himself behind in getting his other crops. It will be a good thing if we can lay down a general rule as to the time when our clover crop should be cut. And just here I want to say, that so far as the cutting of clover is concerned, there is no more valuable aid to the farmer than the hay-cap, which is not much used in this country, but which in England is considered as indispensable to the farm as the hoe or mowing machine. If you have these caps, you can cut your clover at any time in fair weather, cock it up, cover it with a hay-cap, let it lie a

week, if you please, and take it in at your leisure. A man who has a farm of the ordinary size, one hundred or one hundred and fifty acres, if he begins his haying before the fourth of July, will not get in his hay, with the amount of labor at his command, any too soon. I believe we get in our hay in just as good condition as the farmers do down here. I have seen them getting in hay with snow on the ground,—probably for convenience in getting it in on sleds. We are not quite so bad as that, and I am glad to say that we are improving in many respects. Our farmers are getting in their hay a great deal earlier than formerly, they are getting it in better condition, and our cattle are feeling the benefit of it. We in our section are largely engaged in dairying—sending our milk to market, making butter, and in every way using the products of the cow. This question, therefore, is one of great importance to us, because it is the hope of profit that actuates the farmer, and when he finds that he can get a larger production of milk by using the early-cut hay, he will be very apt to turn his mind to these new improvements. Not many years ago, my friend, Col. Waring, sent to me, and wanted me to make some experiments in relation to feeding early-cut hay to my cows. I was feeding a large number of thoroughbreds. At the same time, he sent to another man on the Hudson River, who was feeding late-cut hay. On comparing the results, he found that, with the same number of stock, I was getting a larger production, using only one-fourth as much grain, and my cattle were in better condition. My hay was cut the middle of July. My friend on the North River did not finish haying until the middle of August.

Dr. LORING. I think my friend has laid down a rule that is a little hard upon the clover business. It is the fourth of July all over the country, but the latitude is different, and the growth of plants different in different sections. Clover matures faster in Southern Connecticut than it does in New Hampshire ; than it does with us.

There is another thing. If you seed down a piece of land just before the frosts come (although as Mr. Johnson has properly said, August is the best time to sow herdsgrass and red-top), especially if it is heavy land,—I doubt, by the way, a little, the propriety of seeding such land in the fall,—it would

be well to sow upon that land, early in March, upon the snow, clover seed. Now that clover, sown in March, will not blossom until after the fourth of July; it will not start and grow and get into blossom by the fourth of July. Why not apply just the same rule to clover that you do to herdsgrass? There is a time when that plant is just in the condition that I have described the herdsgrass to be in when it arrives at the point to which Prof. Chadbourne has alluded. Why not take the clover at the same time, and cut that just when it is in rich blossom? I think that is the proper time to cut it; and I think, from the statement of Mr. Goodman himself, when you consider that the time when clover matures in different sections of the country is different, that that is all he meant by what he said. I think the rule I have laid down in regard to other grasses will apply to clover,—that the time to cut it is when it is in blossom, and not on any specified day. If we are going to have any particular day, don't let us have Christmas or fourth of July; let us have Thanksgiving, for the governor can appoint Thanksgiving whenever he pleases.

Mr. GOODMAN. The doctor takes exception to the general rule. The general rule is, that all clover is ready to be cut by the fourth of July. Of course, clover that is sown in the spring is an exception to that rule. I think it is a great deal better to cut clover before it begins to turn brown at all. What I am most particular about is, that we get our haying started before this great national holiday, because the effects of it very frequently last four or five days, and before our workmen recover from them, it is too late in the season to cut our hay to the best advantage.

Mr. ALLIS, of Conway. I think the recommendation to seed down land in the fall is a good one; but I would like to inquire whether dry weather would not have a peculiar effect upon it, so that it would not prove in the end any better or so good as if sowed in the spring. A year ago last August, my neighbors on the lands on which they raised tobacco, sowed wheat, and seeded down in the month of August. I left three acres, on which I raised tobacco that same year, until spring, when I ploughed that land, harrowed it over once, then sowed my oats, harrowed them in, sowed herdsgrass seed,—nothing but herdsgrass,—and rolled it in. Last haying time, those neigh-

bors who sowed their seed in August, had a small crop of sorrel, and that is all they had, on highly cultivated land for grass. I mowed two heavy crops on my three acres which I sowed in the spring. I attributed their failure to the fact that the ground was so dry, and the drouth held on so late that their seed did not germinate.

Mr. KNOWLTON, of Upton. I have had considerable experience in fall seeding. I very much prefer seeding in August, but when the land is so dry that I cannot seed in August, I defer seeding until the last of November, so late that the seed will not germinate that fall. I have tried it three years, and I have had splendid crops in every instance. I tried rye in the same way, and had good crops of rye. I would not recommend this practice when the ground is in good condition to seed in August, for I believe that is the best time to seed, when the season is favorable. But my experience has been very unprofitable in sowing grass-seed on dry ground, or in hot weather; the drouth has killed my seed. I have some land now that I have got to turn over on that account. The grass crop is my crop; I am going to abandon the hoed crops; and my success has been good in seeding even as late as the last of November. I have not had a failure, either in rye or in grass. The weeds trouble me more in the spring with the late seeding than if I sowed in August. I put on my harrow, sow my seed, put on my bush harrow and the roller, and my grass gets up so that it overpowers the weeds, and I have no trouble in the spring, but when I sow late, I do have some trouble with the weeds.

Mr. BOISE, of Blandford. Mr. Knowlton says he has given up the hoed crops. We in the western part of the State cannot compete in raising corn. Grass is our crop. Then the question comes, How shall we revive our lands where the grass roots have been killed, without ploughing? My own practice has been,—and I have been very successful,—to top-dress, put on the harrow in the fall, and tear up the turf. Then I went on and sowed herdsgrass late in the fall, and in the spring, in the late snows, I sowed clover. My neighbors thought I was spoiling my land, and that I should not get any grass; but I have, in four years, more than trebled the capacity of my farm for the keeping of stock. It was all run down when I took it.

There is another point in regard to getting hay in. I never want but one day to make my hay, and I cut three tons to the acre. I cut one day, and get it in the next. But there are exceptions. If we have had a rain, there is more moisture in the ground, so that the hay will not dry so quickly, and the juices of the grass will not be absorbed so readily. I think that point should be taken into consideration.

Mr. ALLIS, of Conway. In our Connecticut River Valley, you know that our special crop is tobacco; but our farmers have got into the habit of sowing wheat somewhat, and they are raising very good crops—thirty or forty bushels to the acre. They seldom, if ever, plough their ground, after the crop of tobacco is taken off. They merely take a cultivator and run it over the ground until they get it about level, and then sow their wheat and roll it down. Those who have tried this plan, think that their seed is more likely to catch, and their wheat also less likely to winter-kill than if they ploughed.

Mr. BUFFINTON. How would the crop compare in quantity?

Mr. ALLIS. I can only say for myself, that I have had better success, after tobacco, in having my grass come up strong and heavy, than I ever did before. I have been told again and again, that I was ruining my farm by raising tobacco, but I have followed it twelve years. I have turned over about half the land that I used to mow to pasturage, and I get a great deal more hay than I did before, and of a better quality. I never put tobacco on any piece of land more than two years in succession. Then I seed it down, and follow it up.

Mr. BUFFINTON. How is the manure heap?

Mr. ALLIS. If it is not as big, I endeavor to make it as big. I aim to have it as large as possible.

Adjourned.

EVENING SESSION.

The evening meeting commenced at 7½ o'clock. There was a large audience in attendance, among whom were many ladies.

The CHAIRMAN. I have the honor of introducing to you this evening, the Hon. WM. B. WASHBURN, the governor elect, who will preside on this occasion.

REMARKS OF HON. WM. B. WASHBURN.

Mr. President and Gentlemen of the Board:—It has given me great pleasure to be with you to-day. With some of you, I have been acquainted for years; others are comparatively strangers. I need not add that I have been not a little interested in the exercises thus far, and especially with what I heard in reference to this county. I had heard of it before, and thought I knew something of it; and when your good chairman presented the facts and statistics, I listened to him with deep interest; but when he informed me afterwards that he had given us only about one-half of the facts, I really felt that I should go back with the conviction that I had known but little of this good county, and feeling a deeper interest in it than I ever had before.

But it is not my intention to take any of your time. I know that you are all waiting to listen to him who is always ready, and who this evening has to present a subject of deep interest to you all. I therefore take pleasure in introducing to you Prof. CHADBOURNE, who will now favor you with his address.

UTAH AND THE MORMONS.

BY HON. PAUL A. CHADBOURNE.

Mr. President and Members of the Board:—We have in the midst of our country a peculiar people. They have religious views which we should not accept, and they certainly have some practices which I presume we should not be inclined to adopt. But it is an old adage,—so old that it is written in one of the dead languages,—that it is lawful for us to learn even from an enemy. It is certainly lawful, right and desirable that we should learn from every great experiment that can be tried in our country; and it does seem to me that this American continent, the first one to come up out of the waters of the ocean, and the last that received civilized man, is the great theatre on which the grand experiments of the world are to be tried. We have had many tried here; many in government, many in religion, and others still remain to be tried; and the Mormon people, despised by many, and, as I believe, a much-abused people, are trying an experiment to-day, and have

been trying it for twenty-five years. The results of that quarter of a century of labor are worthy of the study of every man in this country.

In order to understand the exact conditions of that experiment, it is necessary to say a little of the people and something of the country as they found it; and then to speak of the results of their industry. I speak of their work as an experiment, a wonderful one, and one from which we can learn much, because it has been tried so far from all other communities that its results can be exactly ascertained. The work that has been going on in Salt Lake Valley, and throughout the valleys of Utah, has not been affected, and cannot be affected, by any work done in the Eastern States, nor by any done in California. It stands by itself. Therefore, all those peculiar changes of which I shall speak to-night, you will understand are the result of the work of the Mormons within that fine belt of mountains, the grand Wahsatch, that surrounds the valley.

We are to remember, also, that the people are not, as a whole, the best kind to try an experiment. The Mormon religion is of such a nature, that it would be impossible for a Mormon to come into Fall River, or into Boston or New York, and collect a great number of followers. It is so peculiar, that it requires a particular class of minds to receive it, and therefore they find only here and there one, all over the world, who will receive it. But their system is such that when they do find one, in England, in Scotland, in Wales, in Denmark, in Norway, in Sweden, or in any other portion of the world, who receives that religion, they bring him over, if he desires to come, to Utah,—to Salt Lake City,—to the “Zion” of the “Latter-day Saints.” Therefore the Mormons are a people who have been gathered out of many nations, and are in every sense of the word a peculiar people. And especially so in this,—I do not speak of it as a matter of disparagement at all,—that the mass of them have been gathered from the lower ranks of society. There you have a hundred thousand people brought together from different portions of the world; brought together from the lower ranks; many of them poor, ignorant, coming there in great poverty, and commencing that experiment under, you might say, the most adverse circumstances. We are to remember all this in considering the results of that experiment.

Now let us look for a moment at the land which they inhabit, and see how they found it. Just think of our land. If we get into the cars in Boston, and go on day and night, day and night, and yet day and night, we begin to have some appreciation of the extent of this wonderful land of ours. But after we have crossed the Missouri River, having gone fifteen hundred miles—for you are not fairly started towards Salt Lake until you reach Omaha, and have found the Union Pacific Railroad—we start from there, and, gradually rising, find at once that we are in a different region. The herbage becomes short. It is a treeless region, except where the water-courses are. We go still further, and the grass disappears. As we go on, mounting higher and higher, we find ourselves passing at Sherman, nearly two thousand feet higher than the top of Mount Washington. Take “Greylock,” the highest point in Massachusetts, and take up another “Greylock” right from the ocean and pile it upon the top of “Greylock,” and then far above that the cars will be moving, as we find them at Sherman. So that the valleys among the Rocky Mountains are vastly higher than the highest land we have in Massachusetts. The lowest point in the valley of Salt Lake is over four thousand feet above the level of the ocean, so that if we could sweep everything away from it, Salt Lake Valley would stand as a lofty mountain as compared with the general level. But as we pass on, we come to lofty mountains—the vast range of the Wahsatch. Deep rifts cut through them, called “cañons,” through which we pass, and as we look up on either side, we see immense limestone walls grooved by the old glaciers that have left their marks upon the solid layers of quartz. And then we see the streams rolling onward as they have rolled so many thousands of years, and carrying down, east and west, into the central portions of the continent, the water from the snows that have fallen on those mountains.

We have here what is called the Great American Desert; and the question arises in our minds, constantly pressing itself upon us as we go on, hundreds and hundreds of miles across this desert, Is it possible that this land can become anything more to the American people than just so much solid earth to hold the world together? Is it worth anything? Acres and acres, miles and miles of sage-brush, so called, that is, a kind of wormwood, that will only grow where water seldom if ever

falls, and where little else can flourish. What is the cause of this desert? We find at once that it is over-drainage. There is probably some land that needs to be drained; but the great mass of it has been over-drained. Salt Lake Valley is a good example of this sort of land. You see on the way through this desert the marks of an immense number of old lakes, probably most of them of fresh water, although the great lake of Utah Valley is now salt, as I shall explain. From the central position of our country, we find rivers rolling to the east and west and carrying off the surplus water; and those rivers, rolling on for thousands of years, have worn deep channels through the rocks, in some instances a thousand feet. Lieut. Powell told me that, going down the Colorado, he could count almost the whole of the geological series where that river had made its way down through the solid strata. These rivers, running east and west for thousands of years, cutting their channels deeper and deeper, have cut through the edges of many of those lakes and have drained them. And they are the vast drains, taking out from the centre of our continent the waters too rapidly, and carrying them to the Atlantic Ocean on the one side, and the Pacific Ocean on the other. And therefore we have this vast region, the American Desert, so called, which is over-drained; so that trees and plants that require water can only grow around the mountains, and in certain places in the valleys where the waters from the mountains accumulate. The great mass of the land is a barren waste, covered with the sagebrush that marks the desert.

In Salt Lake Valley, and all around that region, we have a country which is not drained at all into the ocean. How does it happen, then, that this becomes such a barren waste? It happens just in this way:—that the water, being drained off towards the Atlantic on the one side and towards the Pacific on the other, we have here a basin that can receive water only as it comes from the mountains on either side; and those mountains upon either side condense the water from the clouds before it comes over that great valley; it is deposited in the form of snow upon their summits, and as it melts and rolls down into the valley, we should expect, of course, that the valley would in time become filled with water. That is not the result, however; because the wind that comes from the south in the sum-

mer, sweeping over the barren sand that in the daytime is heated up almost to the burning point, becomes so hot and thirsty that, when it sweeps over this valley, it just takes a shaving of water from that lake and carries it over the mountains, to be deposited on the other side or carried further north. That process is carried on all summer, and it is so rapid that water enough never falls there to cause the lake to rise so that it can roll over the high ridges of the mountains and be emptied into the ocean.

When the Mormons came into Salt Lake Valley, the evaporation from the valley was just equal to the water that gathered in it from all sources, so as to leave as a residuum the old original Salt Lake, which was nearly one hundred miles long by forty wide. And it was salt as salt water could be; for the reason that the streams that come down into that valley formerly flowed over salt beds—some of them perfectly solid masses of salt, so that it can be quarried as you do granite. You may take out immense blocks of salt, in some places, and look through them as you do through window glass, so clear and beautiful are they. Salt Lake having no outlet, the water and salt which are carried down there remain in the lake, except as the water evaporates; and although to-day Salt Lake undoubtedly contains nearly twice as much water as it did when the Mormons went there, it is still so very salt, that in the spring of the year when the water flows into the shallow places on either side, and afterwards dries up, you can shovel up just as much as you please of the most beautiful salt.

Now I have touched upon a point upon which I must enlarge right here. I say that Salt Lake contains nearly or quite twice as much water as it did when the Mormons came through Emigration Cañon, and, coming in sight of the lake, burst out into the song—"Now Zion's banner is unfurled," thinking they were led there by God, and determined to fix their homes there. This valley presents a problem in physical geography; and I want to make a statement respecting it, because the experience of the Mormons will perhaps serve to correct some of our opinions in regard to physical geography, and will suggest some problems for us to study upon. I do not pretend to explain all the changes that have taken place in this valley; but I will give the facts. That great lake, one hundred miles

in length by forty in width, has risen regularly one foot at least a year, for the past ten years. The water in that lake is now ten feet deeper than it was ten years ago. Now, if you take ten feet from the surface of that lake,—as it extends over so much of the country, it has eaten up immense quantities of land every year,—I say, if you take ten feet from the surface of that lake to-day, I have no doubt you will have nearly as much water as in all the lake underneath, because it is a comparatively shallow lake; and the portion underneath occupies so much less area, that I think I am perfectly safe in saying that the water is twice as much as it was twenty-four years ago when the Mormons came there. If we look up on the side of the mountains, we see the old beaches where the lake once wore its way into that solid rock, showing that where Salt Lake City now is, was once deep down in the water. The lake is now slowly rising, and if the process that has been going on in the last ten years should continue, the time will come when the Salt Lake problem will be solved; it will be in a state of perfect solution; for the water will rise and wash far above it on the mountain side. But it is not in Salt Lake Valley alone, or immediately around the lake, but in all the valleys around there and throughout that territory, that the water is increasing in quantity. Capt. Stover, who went from the State of Maine, told me that ten years ago he cut grass on the borders of Stockton Lake, where now the water is forty feet deep. He said that then there were no fishes except small ones in the little streams there, and now there is a large lake, forty feet deep in the deepest part, and well stocked with large and beautiful fishes. When you pass up and down throughout the Territory, as I have done this summer, you will find evidence that in all the streams the amount of water is constantly increasing, and the Mormons regard it as a direct interposition of God. They think it a special providence in their behalf, and I do not wonder at it, when I see what it has done for their valley. Brigham Young's son once told me—not on a religious matter, but I could see that he believed in it as a religious matter—that he had just come from a certain settlement in the southern part of the Territory, where this increase of water was very manifest. He said that the water was constantly increasing, and new springs were bursting out. “Now,” he says, “twelve

years ago they went down there and planted a little settlement; and they estimated the amount of water there was there, and our people have become very accurate and exact in estimating the amount of water required for the use of every family, and also for the raising of the products of the earth. We calculated there was water enough in that place for twelve families, and we located them there. I have just returned from there, and there is a population of fifteen hundred souls, and an abundance of water for all." I could see at once the effect upon his mind.

Now, this increase of water is a part of the problem that we have to consider. Let us see exactly what has taken place. I saw it stated in a paper within a very short time, that Prof. Henry has made the statement that the observations compared at Washington for the last twenty years have shown that the cutting off of the forests does not affect the *rain-fall*, as has been popularly supposed. Now let us see if we do not get something here that bears upon that point. Perhaps he is right about it, and perhaps we have not looked in the right direction. I am much disposed to think we have not.

What have the Mormons been doing to increase the amount of water? Let us look at that question first, and then we have some other aspects of the case to consider. Certainly one thing they have been doing is to cut off the wood through these cañons. Not only have they been cutting it off very rapidly themselves, but fires have gone through there and burned up immense quantities, so that the number of trees around Salt Lake Valley is very much less than it was when the Mormons went there. We certainly cannot then attribute the increase in the water to the trees in the mountains or in the cañons. The water almost entirely falls upon the mountains and runs down into the valleys. The water falls mainly in the form of snow in winter, and this snow finds the streams that flow into the valleys. In my opinion, the increase of water through all that Territory,—and I wish to say here that I am now touching upon a point that I do not feel certain about at all; the facts I am certain about, because I have seen them; I am now touching upon theories, and perhaps against those theories which have seemed to be well established,—I say it seems to me that the increase of water throughout the whole of this valley (and of course the increase

of water throughout this valley has an important bearing upon our ability to use the rest of that land through the Rocky Mountains)—that increase, I say, depends not upon the greater fall of water, by any means, but upon the prevention of evaporation. Now let us see what the condition of things was when the Mormons came there. Here was this immense valley, most of it a barren plain, so that in the summer time it was so hot that the winds came over it thirsty and ready to lick up the waters and carry them over the mountains, and the water that came from the mountains and through the cañons came down in streams which made their way with the greatest rapidity to Salt Lake. There was that lake and the streams, there being no trees or anything upon their banks to prevent evaporation, all exposed at once to the hot wind that came from the south, which, having no trees in its way, swept along very rapidly, and constantly carried this water off. Now let us see what the Mormons did. They stopped this water coming out of the mouths of the cañons. They dug canals all along the base of the mountains, and, instead of allowing it to come down into the lake, they carried it along in the canals, keeping them all the time full, and then they tapped them in a hundred places, taking the water along in rivulets, making this whole land like a sponge, and not allowing the water to go down into Salt Lake until it had permeated the soil. Well, you say that so much water is apparently lost,—that Salt Lake, having so much less water coming into it, would be so much smaller. But these canals go through land that is now covered with herbage of every kind, and rows of cotton-wood trees and other trees, which shoot up as if by magic. And that is not only the case in the comparatively small territory about Salt Lake, but all through that valley. Most people who have visited Salt Lake City for a few days, come back thinking they understand the whole Mormon question. The truth is, they see but a small sprinkling of the Mormons there. They ought to go down through the Territory one hundred or one hundred and fifty miles, and find out what they have done. We find now the valley through this entire Territory, instead of being a dry, barren plain, over which the wind used to pass so rapidly, a country covered with vegetation, with grass, with corn, with grain of various kinds, and with groves of trees, so that the wind, in the first place, moving up

through the valley, is checked by the trees, and when near the surface of the earth, it probably does not move up the valley with half the rapidity it did. And then remember that, on the surface, instead of passing over hot, barren sand, it passes over fresh herbage, so that we have all through that valley a layer of air that moves comparatively slow, and at the same time is charged with moisture, so that, when it strikes the great Salt Lake, instead of being a rapidly moving current of air, hot and thirsty, it is moving comparatively slow, is nearly saturated with water, and has no longer any ability to take up the waters of the lake as it formerly did. Therefore the waters accumulate, and so over the whole surface (and this is true of all these places) evaporation is prevented by the introduction of trees to prevent the rapid movement of the currents of air, and also by covering the whole surface of the earth with this vegetation. That is my explanation of the increase of water in that valley. It is not that any more water has fallen there,—perhaps not so much, certainly not any more,—but I believe it is because the water is saved.

But there is one thing that may seem to bear against this theory. It is asserted by the Mormons—I cannot say whether it is so or not—that the rains are more frequent in Salt Lake City than they were twenty years ago, when they first came there. That would seem to indicate that more water falls there. Let us look at that a moment. I have been over this country, back and forth, eight times, and have spent two seasons there, and I have watched this thing very carefully. The rains they speak of as falling in Salt Lake City and around there, are showers; and I have noticed this respecting them, that the clouds are generally of small extent and hang very low. Every shower that I have seen there has apparently commenced within the mountain ranges. It appears as though these showers are formed from the vapor rising from the valley, and condensed by the cold currents of air that come over the mountains. As there is a larger evaporating surface and less movement of wind near the surface than formerly, more vapor accumulates in the air than when the country was bare of vegetation. The water that falls is not directly from the Atlantic or Pacific—in that case it would be a real addition to the water in the valley—but

is just the coming back of what went up, instead of its being carried over the mountains as it formerly was.

Then there is another thing which is very interesting connected with this problem which they are solving; and that is the change of climate. I notice that, in giving a report of a lecture that I gave the other night, the papers mixed things up a little, as they sometimes do. They reported me as saying there were formerly frosts every month in the year in Salt Lake City. It may be true, but I didn't say that. What I did say was, that there are parts of the valley where formerly there were frosts every month of the year, where now they can raise corn and the most tender vegetables with the greatest ease. No trouble from frosts at all. The frost was so common in the valley, that when the Mormons came to Fort Bridger, and old Bridger asked where they were going, and they told him they were going over the mountains to live, he said, "You may as well go back, for you will find nothing to eat." They told him, "We have got the seed that we're going to plant." "Plant!" said he, "I'll give you a thousand dollars for every bushel of corn you raise there." It would take a large treasure to buy at that rate the bushels of corn that can be raised in that valley now. In San Pete County, especially, one of the first settlers who went there told me that, every month in the year, they had not only frosts, but quite severe frosts; but when I was there this summer I saw all the agricultural products that man could desire, raised in the greatest abundance. How is this to be accounted for? Why, this same condition of the country that rendered evaporation so rapid when the Mormons first came there, caused radiation to be excessive the air was perfectly clear nearly all the time; it was free from moisture, and therefore, when the sun was down, radiation took place with very great rapidity. The surface became cold, and the frosts were severe. But now their process of bringing the waters down from the mountains, making them fill the whole land and cover it with vegetation, causes the moisture to rise up in the air; the cold air from the mountains condenses that moisture, and that protects the surface of the earth like a covering, and therefore the frosts are prevented. It is perfectly plain to me why they disappear, although many of the Mormons look upon the change as a miracle. It is a wonderful illustration of the operation of

those laws of God which control the whole universe ; and when we do what we ought to do, accept that curse of labor which is a blessing as we are now, the very elements respond to our work, and meet us almost half way, if we only know how to meet them and take advantage of them. Here, then, in this valley, where Bridger said he would give a thousand dollars for every bushel of corn they would raise, we find that the water is becoming more and more abundant every year,—that the frosts are driven back,—so that many parts of that valley are like the most cultivated parts of New England ; and in a very few years I believe it will be the best cultivated portion of our land. So much for the physical geography of that country, and the changes which have taken place there. The study of those changes will be of very great advantage to us, for you will see at once that the solution of this problem will enable us to judge of the value of immense quantities of land through all that mountain region. That is a matter of very great importance ; not, perhaps, because we want so many more acres of land, but because of the desirability, as was stated here this afternoon, of raising the various articles of food where we want to consume them. When the lumberman goes into Aroostook County to cut down his trees, he must eat ; and if you can raise his food there upon the ground, you make it better for the lumberman and better for the farmer. Now these ranges of mountains are perfectly filled with metals. It is the most wonderful country in the world. And it is of very great importance that, in connection with such immense mineral treasures as those mountains contain, we should be able to know that in every little valley where the water from the melting snow runs down and gathers in springs or in small lakes, if we will take hold and cultivate the land, we shall find the climate continually growing better, and the water increasing in quantity, so that we may have near the mines the very things which the miners want to consume.

Here is one of the things which the Mormons have done : Twenty-four years ago, last July, they first saw Salt Lake Valley—most of it a perfect desert. They came there in poverty, came there persecuted ; for, whatever we may say of their religion, they came there a persecuted people, and in the greatest poverty. As some of them told me, they had to go down

in the lowlands and dig thistle roots month after month to live. They came there in that condition, and now we have that whole valley teeming with flocks and abounding with corn and the finest fruits that grow anywhere; all prepared beforehand for those mines that are now opening with such richness all through those mountains. If you take up the papers you will see very severe things said about the Mormons, because they refused to let their people go into the mines. It is said that they kept them from mining, kept them from riches, etc. But when I look at that people as they are, and remember what they were, and how they came there, it seems to me that the Mormon leaders did not only the wisest but the kindest thing they could do. Suppose they had sent those poor, ignorant people into the mines searching for minerals in the days when they hadn't enough to live upon in the valley, what a poor, miserable set of men you would have had all through that valley! The leaders said, "Your first duty is to cultivate the earth, to raise crops, and lay up a store of corn and wheat—enough for yourselves and your families." They insisted upon that, and the people followed their advice. I do not believe at all in the Mormon system, you understand, but I do believe in the wisdom of that advice. I believe that the people are richer and happier by far to-day, in consequence of having followed that advice, than they would have been if they had spread through those mountains, digging—they knew not for what; and left the valley as it was—a desert. They would have been doing the most unwise thing, and we should have had pestilence and famine instead of the plenty we see now everywhere. Now the time has come when the mountains can be dug from top to bottom, for food is abundant and cheap. The finest wheat that ever grew is raised in San Pete County, and sold for half a dollar a bushel.

Perhaps I should say something in regard to the Mormon mode of cultivation. Of course, they depend entirely upon irrigation; because, when I say that water sometimes falls, you understand that it is not enough, by any means, to insure crops. No crop can be produced, in most of that country, without irrigation. Therefore, no land can be cultivated except that which can be irrigated; and in order to be irrigated, it must have a certain relation to the streams that come out of the

mountains. But it happens, in a country which is made up of mountains and valleys, that almost all of the land is so situated,—the great portion of it is so situated,—that water can be brought upon it. There are benches or old beaches running along the mountains and sloping towards the valleys, and by digging large canals on them, and then by tapping these with small canals, you can bring the water down upon the valley for irrigation. This is a thing that could not be done except under a system of organized labor; and here we have another thing which is worthy of consideration,—I don't believe in the Mormon system which does even this, because I believe man should be independent,—but here is coöperation; and I believe in the principles of coöperation. It is to be a great thing, and we have not begun to study the subject enough. The coöperation here is under the direction of a leader—just the same sort of coöperation that there is in an army when it has a general at the head of it who commands his subordinate officers, and his officers command the privates, and every man has to go just where they say. That is mainly the sort of coöperation there is among the Mormons. You know that in such a way you get an efficient army, and in this way they have secured great efficiency in working out this problem. Labor is organized throughout the whole extent of that Salt Lake territory in such a way as it is not organized in any other part of our land. You have Brigham Young, that old, stalwart fellow, whose nod moves all Mormondom, and who is nobody's fool; with a big head and bigger neck, a jaw like a lion, and whose will few can withstand. He has an eye also for business. He is a shrewd business man; a man of sound judgment in all temporal matters. Of course, he makes mistakes, like all other men; but, take it by and large, Brigham Young's judgment is as good as that of any man that can be found. And he has wrought out results in agriculture, in railroads and in telegraphs, of such a nature that it may be said there is no man in this country who has equalled him with the same means. He sets in motion the whole of this machinery, and then there are men under him, in subordinate places, setting in motion the machinery in smaller circles, so that, in every settlement, they have a bishop, and the bishop is not only the spiritual leader of the people, but he looks after temporal matters. He is the man to whom they all go for advice; he

receives directions from headquarters, and everything goes according to his will. In this way, you will see that these people, although they may be ignorant, although they may be brought in by ship-loads, and distributed among those settlements, are set to the work they can do the best. The whole thing is organized, and when you go up and down through the Territory, see what they have done, see the amount of labor that they have thrown away, in one sense, in building those great forts to protect themselves and their cattle from the Indians, the roads they have made, the canals they have dug,—why, there are four hundred thousand rods of these canals, besides those minute canals or ditches that lead the waters to every field; really the work they have done is astounding,—when you look at all this, you see that nothing but persistent industry, under a most perfect organization, could have accomplished what has been accomplished in that Territory in the time they have been there. I don't believe the world can show another example to match it. That is an important lesson in regard to what can be done by coöperation. If we could have something that acts spontaneously from the people; if we could have that people or any other work together for the common good, one hour's labor would be worth what two are now. Besides, when you find a people organized like that, they have no time for mischief. Everybody works. When you go away from Salt Lake City down into the Territory, you cannot find any tobacco nor liquor. They do not believe in either. When you take a people like that, temperate, working all the time, and saving, and all working under an organization, you see wonderful results. Poor as they were when they began, and bringing in multitudes of poor people all the time, they are still a comparatively rich people.

The most perfect coöperation is to be found in this water system. The people live in villages. And here is another wise thing. They do not make a farm here, and put a house on the corner of that, and then another farm there, and put a house on the corner of that, and so on; but they put their houses pretty near together. And then their farms are not large: they cannot have large farms on this system. There can be no skinning, where you have to irrigate every foot of land you cultivate. It is condensed husbandry. Here we get another

good thing. Each one can have only a small amount of land, because it must be watered, must be carefully tended, and every single inch must be made to produce all it can. The houses being near together, the people can get readily to church, to the school-houses, and to the places of amusement.

Then comes the time for letting the water on to the crops. From the large canals many small canals come down by each man's land. There must be enough of them, so that each man can have control of one of those canals long enough to perfectly irrigate his lands. That is the problem; and the best men in the community arrange this matter—determine where the canals shall go, how long the water shall be taken from each canal, where it shall be brought in order that the land may be perfectly irrigated; and they decide that such a man can have the water so many hours to-day, and so many hours three days from now. Every man knows the time when he can turn the water on his land, and when it must be turned off; and no matter whether it is midnight, or cock-crowing, or any other time, when that moment comes, he must be ready to turn the water on his land. And not only that, but before that time comes, the ditches must be cleared out, and everything arranged, so that, when the water is turned on, it will go where it is needed. There is no time to lose. The whole system makes men wary and watchful, makes them look out beforehand. A man knows, for instance, that to-night, at twelve o'clock, he may turn the water on to his garden for three hours, and that when it has run three hours, his neighbor can turn it on to his garden, and if he oversleeps, his garden must go dry; there is no help for him. Or if his ditches are not prepared, so that the water can run along readily, his crops must suffer. You see, the man must have everything in readiness, the ditches all arranged properly, and when the time comes, he takes the water from the large canal, and it passes along through the smaller canals in his grounds the length of time that is allowed him, and then the next man takes it. It is so arranged that each man shall have enough for the particular crop that he raises. Nothing but the most perfect coöperation, under a rigid system, could possibly control that thing, among so many people, and with so many interests, when we consider what human nature is;—and I have no doubt there is quite as much human nature

among the Mormons as there is among other people. We have seen some instances of it, at any rate.

You see, then, that the drouth and the frosts they have managed to conquer, to some extent. There is almost always some enemy that is very difficult to conquer; and they have had two enemies there: one is the crickets, and the other the grasshoppers, or the "hoppers," as they call them. The crickets, which came first, they have little trouble from now. They are large, black insects, almost as long as your finger, which came down from the mountains in vast numbers. They came even the first year the Mormons commenced their work there, and they would have eaten up almost the whole of their crops, if they had not turned out in full force, to destroy them. Fortunately, these insects do not fly, and the Mormons dug ditches around their crops, and the women and children stood with mauls and killed the crickets as they fell into the ditches. In this way they destroyed myriads of them. Now occurred a curious thing, that they deem a miracle. When these crickets were so very numerous, there came a bird, in immense numbers, and made war upon them. They call the bird a kind of gull. I have never seen one, but I think it is a gull, or some bird of a similar character. They came, as I said, in immense numbers, and covered the fields. And it seems as though they were made to destroy these insects, for not only would they eat them greedily, but as soon as they were filled, they would throw up what they had eaten, and eat again! They would stand from morning till night killing those crickets. This is vouched for by many persons; and in their books they refer to it as a miracle. As there was no flock of crickets when I was there, and the birds do not come except when the crickets are there, I did not succeed in securing a specimen. The Mormons consider it a kind of sacred bird. One of the most intelligent of their number said to me, when I told him I wanted to get one of these birds, "You could not do anything that would be a greater outrage to the feelings of the old Mormons, who came into this valley first, than to kill one of those birds."

But they have, as I said, another enemy,—the "hopper,"—which they cannot get into these ditches, because they fly in such numbers as really, at times, to darken the sun, like a cloud passing between the sun and the earth. Some facts will show

you the number and the voracity of this insect. This same Mormon told me that the first time they came upon his land, he had a piece of corn planted in a place that I know very well, by the mouth of the cañon, and it was just coming out in tassel. They do not wait until the corn or the grain gets a little hard; they will not injure it then; it is when it is in a soft and succulent state that they attack it. He said that they came to that piece of corn one morning, and the second night after, there was not a single particle of it to be seen. They had not only eaten off every leaf and stalk, but eaten the roots down into the ground, so that the land looked as if no corn had ever been planted upon it. He said, and others have told me, that they have seen one of these flocks come on to a wheat-field in the morning, where the wheat was all headed out, and at night not a vestige could be seen in the whole field; it had been gnawed down into the very ground, just as far as they could find a particle of the plant. And they sometimes not only destroy the first crop, but a second and even a third. They will come upon a fruit-tree, and not only eat every leaf, but they will take every scrap of bark of that year's growth, so that the twigs stand out perfectly bald and white. Sometimes there comes a strong wind and drives them down into Salt Lake, in such quantities that the waves throw them up in perfect winrows, as you see the kelp thrown upon our seashore. Seeing them remain there, year after year, in such masses, gives us some idea of the vast accumulation of animal remains in geological times—we see how such immense masses of animals could be pressed together in some places, when we see such a vast accumulation of these grasshoppers pressed together around this lake.

There seems to be no way to get rid of these pests, because, when they have eaten up all they can find in the valley, they go up on the benches,—dry, hard sand, where nothing will grow,—and there they deposit their eggs. There is no way of getting at them, to destroy them, and the eggs hatch out the next spring, and after a certain time they come down and repeat their ravages. Of course, there are certain times when the season is unfavorable and kills them off, and the Mormons say that they can generally tell the fall beforehand whether there will be any “hoppers” in any given locality the next year. If

a flock comes over and begins to deposit their eggs along the benches, they know what to expect the next season.

This is one evil against which they have to contend. If any one can prescribe a remedy, he will do a great service to that country.

Just before I came on to this platform, some one remarked that he supposed I was going to talk about the Mormon religion. I told him that was not in the programme, but, at the same time, I could manage to throw in a few words in regard to that. I do not believe in their social system which grows out of their religion,—I speak of that system now simply as bearing upon this matter of industry,—I do not believe that their social system is one calculated at all to cause the people to rise to a high state of civilization. I should not refer to it in this connection, were it not to express my opinion on this point. I think the great results I have seen there, and which I have referred to here to-night, have been brought about in spite of a religion that has little tendency to raise men up to a high plane, and of a social system that in my opinion has a tendency to lower men. I say that here as I would say it to them; although I do say that, in my opinion, they have been very much abused, as they have been very much misrepresented. The Mormons, as I have said, went there from persecution. They were persecuted, undoubtedly, and many things that we hear said about them, with reference to their conduct, with reference to their government, arise from the fact that they went there perfectly goaded to desperation. When men have been driven out,—when they have seen their homes burned, when they have seen their friends shot down, when they have been persecuted for their religion, when they have been, as it were, banished, the iron enters into their souls, and they will say and do a great many things, which people on the outside, who know nothing about the situation, think very hard. One intelligent man said to me, “I came over that mountain barefooted, my feet bleeding; I had nothing to live upon, and I went down into that valley and dug wild roots for months to live upon, and I am ready to do that again, if need be.” On all other subjects, that man is just as intelligent as you or I, and a man who, on all business matters, would talk as intelligently as any one. And the man of whom I spoke as coming on with me, is building

one of the finest mills in this country ; not as large as some in Fall River, but a large mill ; and he came on to buy a hundred thousand dollars' worth of machinery. His credit is good for any amount he wants to buy. But when you touch him on the subject of religion, he is as sensitive as we would be ; he believes in his religion as firmly as you and I do in ours. But while we say and feel that such Mormons as he are wrong in their belief, they are entitled to kind and careful consideration.

I have not touched upon many aspects of the Mormon problem that I ordinarily touch upon in my lectures. I have simply referred to those subjects which I think important, and which are worthy of the attention of the members of the Board of Agriculture—the subject of physical geography, the relations of different parts of our country to each other, and the organization of labor. But in addition to these, there are very many other things which need to be considered by all our people, and by the legislators of our people, who are dealing with this Mormon problem. They have been misunderstood and belied beyond measure. I have been indignant to hear the talk of men who have been to Salt Lake City a day or two, perhaps, and listened to the stories told around the hotels and stables about those men, stories that I knew were false from beginning to end. Such stories are related and passed on from paper to paper. But these people, who have been so abused, are doing a good work, so far as industry is concerned. They need to reform in regard to their social system. Polygamy ought not to be tolerated in our land. Let it be blotted out. But still, when you have said this, there are many things that can be said in favor of the Mormons, and many things which you can study to advantage among them.

SECOND DAY.

WEDNESDAY, November 22.

The meeting was called to order at 9½ o'clock, by Dr. DUFFEE, who called upon Hon. RICHARD GOODMAN, of Lenox, to preside for the day.

Mr. GOODMAN introduced as the first speaker, Dr. JAMES R. NICHOLS, who delivered a lecture on

FOOD OF PLANTS, AND SOURCES OF SUPPLY.

BY DR. JAMES R. NICHOLS.

The most delightful and instructive of the studies connected with the farm, relate to plant-life and the food of plants. It may seem to many that a consideration of the food of plants implies the necessity of a belief in the possession by plants of certain organs or powers of digestion and assimilation ; and this belief should be entertained, for it is founded upon fact. Plants do indeed in a most proper sense eat and drink, and they are as capricious in regard to the kind and quality of the food which they demand, as are animals or human beings. It is as interesting to study the nature of the appetite and wants of a stalk of corn or wheat, or a blade of timothy, as that of a child which the mother so carefully and anxiously watches and tends during the weeks and months of early infancy.

What a mystery there is in the life of a plant ! It is true, modern science, by the aid of the microscope and chemical analysis, has solved many intricate problems connected with plant-life, which are exceedingly interesting and instructive. The nature of the substances employed in building up the plant-structure is well understood, and also the form of mechanism which is adopted in the first beginnings of growth, and the chemical changes and transformations which occur ; but the nature of the *vital force* which guides, and upon which all activity depends, we do not understand, and it is probable that human research will never shed much light upon this mysterious but most interesting problem. The little microscopic cell is the workshop in which great changes are elaborated, and during the season of vegetable growth this is the seat of the most intense activity. Every plant that grows upon our earth, however great or small, must be considered as having originated from a single cell, so infinitesimally minute, that the highest powers of the microscope are required to observe it. If we turn over one of the pebbles common in our brooks, we shall find a slimy material, of a greenish hue, adhering to its under side. This covering is a true plant, but it is one of the lowest of known forms. If we examine it with the microscope, it will be found to be perfect in structure, having an organism so wonderful as to command our admiration. Feeble and insignificant as it is,

it corresponds in structure with the huge oak which grows by the stream and overshadows it with its branches. The plant that adheres to the rock consists of a single cell, but that cell is as perfect and beautiful as any of those which make up the structure of the oak. The tree is but an aggregation of cells,—cells piled upon cells; and the work that is carried on within them is no more complex than that which goes on in the workshop of the humble unicellular plant.

It is with a choice of terms that we designate the cell as the workshop of the plant, in which the materials that enter into its organization are elaborated and fitted to aid in the increase of its substance. The nature of the food which is manipulated within the cell is indeed peculiar, inasmuch as plants gather together the waste products of men and animals, and again fit them for the use of higher organisms. Plant-food is oxidized food—food which it is impossible for animals to assimilate; and the plant, in all its functions and in the objects of its growth, manifestly occupies an intermediate position between ourselves and the insensible rocks. This is absolutely essential to the existence of man upon the earth. Of all the functions of plants, the most remarkable are connected with or related to the solar rays, for they possess the power of utilizing the sun's heat in a way which enables them to pull apart, as it were, some of the most complex and refractory compounds known to modern chemistry. The most tiny, feeble leaf, or blade of grass, has a power in chemical decomposition greater by far than is possessed by Liebig, Boussingault, or any of the great experimenters of the age. The separating in silence, in the quiet of the meadows, by organisms so frail that we can crush them between the thumb and finger, of a compound so fixed as carbonic acid, is one of the marvels in nature which puzzles and confounds the philosopher, and leads him to bow in humility before the God of nature, whose power so infinitely surpasses that of man. But after all, this analytical power of the plant is no less amazing than its synthetical capabilities. The work of tearing apart oxidized bodies is immediately followed by that of rearranging the elements, and forming new compounds still more complex, and into these, as a fixed principle, less oxygen is allowed to enter. The great work of the plant is, to disassociate oxygen from compounds, and thus store up energies which are made

apparent when we use vegetable substances as fuel upon our hearthstones, or as food in our bodies. All the forces resulting from heat and muscular exertion have their origin in plants, and however great may be the exhibition of power, the leaves of the trees, and the grasses of the field, have utilized or elaborated it all from the solar rays.

Although the food of plants, as well as the method of appropriating it, differs from that of animals, there are analogies not only apparent but real between them. In animals we have the respiratory functions, and so we have in plants, for plants breathe as truly as we do ourselves; we require our food to be composed of certain elements arranged in certain combinations,—so do plants; we find it essential that our food should be in particular forms or mechanical conditions,—so do plants; we must be regularly supplied with food, and this is the case with plants. These are some of the similarities existing between plants and animals, and serve to show how intimate is the relation which subsists between plants and the higher forms of organized structures.

Although we have learned with certainty regarding the elements essential to plants, and also the forms of combination required, we have yet to learn the exact mode in which they acquire their food, and how they are able to build up such bodies as cellulose, starch, albumen, oil, etc., from these elements. No processes which chemists venture upon in the laboratory are found so difficult as the synthetical production of organic compounds. Indeed, organic chemistry has thus far proved totally incompetent to instruct how to form any one of these bodies from the elements, and for their elaboration we must look solely to the vital chemistry of animals and plants.

It is a well understood fact, that without plants animals could not exist upon our planet. In the wonderful economy of things it is absolutely essential that there should be some intermediate or connecting link between ourselves and the mineral kingdom, and plants constitute this important link in the chain of life. The three kingdoms, animal, vegetable and mineral, are correlated and involved in a cycle of changes which are unintermitting, and wonderful in their nature. We are incapable of being nourished by any form of mineral substances, but such nourish plants, and are transformed by them into vegetable

tissues and products; and subsisting as we do upon plants, we draw support indirectly from the insensible rocks. The plant consumes the rock-dust, and attracts to itself the carbon of air and earth; we transform these into flesh and bones, and, as a last step in this perpetual circulation of matter, after death they relapse again into their dead inorganic condition.

It was formerly thought by chemists that plants lived upon humus, a compound entirely organic in its nature, and when some of the metals were found in the ash of plants they were regarded as accidental ingredients or extraneous bodies which somehow intruded themselves into the incinerated mass. In our time, we know that these mineral bodies enter the vegetable structure as food, and that it cannot exist without them. The mineral portion of plants is small indeed compared with the nitrogenized and carbonaceous parts, and this paucity of the mineral substances was undoubtedly the reason why the early experimenters were led into error.

At present we are acquainted with sixty-three elements or primary bodies, of which all things, animate and inanimate, are made. Twenty-two of these have been found in plants, and therefore are to be regarded as food material. Let us for a moment consider the strange metals and other substances which plants absorb into their structures. Among the metals we find iron, potassium, calcium, sodium, magnesium, manganese, copper, cæsium, rubidium and zinc. It has been stated that arsenic has been found in plants, but this is doubtful. The non-metals are iodine, bromine, fluorine, chlorine, phosphorus, silicon, carbon, hydrogen, nitrogen, oxygen and sulphur. Nothing can appear more singular than the fact that the refractory metal, iron, can find its way into the stalks and leaves of plants, or that the rarer metals should be hunted out of the soil by them and appropriated as food. Some varieties of plants have peculiar appetites and require most extraordinary elements in order to thrive. Tobacco is one of these, and the ash which clings to the end of the smoker's cigar contains substances found in but one or two other plants known to man. Among the rarer bodies are the newly discovered metals cæsium and rubidium, and how or where the plant obtains them is indeed a mystery, as the most delicate chemical tests have failed to detect these elements in soils. In common garden beets, also, the same substances

have been found. Copper has frequently been observed in vegetable products used for food, and, what is very singular, the metal has recently been discovered in the feathers of birds, and some of the tints in the plumage are due to its presence. The fluorine which is found in the enamel of teeth in men and animals, comes from plants, as does also the manganese which accompanies iron in the blood. Aluminium, the metal which, within a few years, has been regarded with special interest, as of great service in the arts, has been found in certain species of *Lycopodium*, and zinc has been found in the *Viola calaminaria*, a plant common in some sections of France. Bromine and iodine are found in the marine *algæ* or sea-weeds, and for a long time all of these important substances, employed in medicine and the arts, were derived from sea plants cast upon the shore by the waves.

The organic constituents of plants, elaborated or formed from combinations of the elements, carbon, hydrogen, nitrogen and oxygen, make up the largest portion of their bulk, and therefore must be regarded as of essential importance as food. Before considering the sources and value of these agents to vegetable structures, it will be interesting to examine briefly the conditions under which plants start into existence, and the forces or agents which are involved in developing and sustaining the embryo before the plant has the power of seeking its own food.

In all the changes and evolutions constantly going forward in the vegetable world, the sunbeam plays a most important part. Analysis of a sunbeam shows that it possesses three distinct functions or powers. It is capable of supplying light and heat, and also it has *actinic* force, or the capability of producing chemical decomposition and recomposition. Upon the chemical influence of the sun's rays depends the germination of seeds as well as the growth of the plant. We bury the seed in the ground and shut it out from the influence of light, but we do not place it beyond the reach of the sun's actinic influence, for that penetrates like heat to the little earthy couch where the embryo plant lies hid, and arouses it into life. Light, or the luminous rays of the sun, so important to the well-being of the plant, is actually inimical to the excitation of vitality in the seed. How singular is this fact! A series of carefully conducted experiments have proved that seeds will not germinate

in light, although supplied with heat and moisture, when the actinic rays are cut off. Deprived of the luminous rays, with the actinic in full force, they spring into life with great rapidity. Seeds sown upon the surface of the earth will scarcely germinate, as soil cultivators very well know; and on the other hand, seeds buried deep, so that the actinic rays cannot reach them, will certainly perish. The planting of seeds so as to secure the proper distance below the surface is a most important point in husbandry, as it has much to do with the early starting of the plants and the success of the crops.

How beautiful and wonderful is the process of germination, when the chemical and vital phenomena are set in motion by the actinic rays! The starchy particles of the seed become converted into gum and sugar upon which the young plant feeds. The tiny root peeps out from the husk, and with mysteriously directed powers plunges downward into the fertile soil. The slender plumule pushes upward towards the light. The soil cracks and heaves, and the infant vegetable emerges, fresh and moist, into the world of air and sunshine; with the unfolding of the first pair of leaves, and with the first lighting of the sunbeam upon their tender tissues, commences a series of chemico-vital phenomena wholly different from that of the preceding stage of existence. The plant is now fairly dependent for food upon its own energies, and root and leaf are the theatres of great activities.

None of the elements named as constituting the food of plants exist as such in them, save oxygen and nitrogen. Half the weight of a dried plant is carbon, and yet it does not exist in it as free carbon; it is all locked up in combinations of greater or less complexity. There is not one of these elements of food that can be supplied to the plant in its naked condition, as they not only have no power to nourish but are positively poisonous. There is much misapprehension regarding these points among farmers, which arises from not clearly understanding the statements of writers upon the chemistry of agriculture. Not unfrequently inquiries are received concerning the cost of nitrogen, carbon, phosphorus, etc., and sometimes orders are sent for these agents, which are designed to be used for fertilizing purposes. While it is true that nitrogen is an element needful in the nutrition of plants, it must be presented not

alone, but in one of two forms of combination,—either as ammonia or nitric acid ; and further, the acid must be in association with an alkali, as soda or potash, in order to be safely employed by the farmer. In either one of these forms it is of immense value as plant food. Nitrogen is a gaseous body, and has neither taste, color nor smell. It cannot be burned, it will not support combustion, and it cannot be breathed into the lungs. It is a strange, negative element, and yet without its influence not a stalk of corn nor a blade of wheat can grow. It is the most costly of all our fertilizing agents, and yet millions and billions of tons are present in the air constantly, and every plant is surrounded by and immersed in it. Is not this statement perplexing or paradoxical? Nitrogen as it exists in nitrogenous bodies is alone available for plants, and the cheapest source, outside of refuse animal compounds, is in the form of nitrate of soda. This salt, known as Chilian saltpetre, is sold at the present time at about four cents per pound, which makes the nitrogen it contains cost about twenty-eight cents per pound. The nitrogen in sulphate of ammonia, at present market rates, costs thirty-five cents, and I have not found it so readily available or prompt in its action upon my fields. For grass lands, as a top-dressing, the nitrate of soda has proved with me a profitable agent. It brings in the better quality of grasses and largely increases the crops. It should be pulverized fine, mixed with an equal quantity of fine, seasoned peat, and sown evenly over the field, giving to each acre two or three hundred pounds of the salt. Without a supply of nitrogenous food plants become feeble and ultimately die ; and hence we must supply it in some form, either as it exists in manure or in commercial substances. The soil does not furnish it in sufficient abundance, neither does the atmosphere in any available form. There is always a little ammonia in moist air, which comes from decaying animal or vegetable matter, and also there are traces of nitric and nitrous acids in rain-water, but these sources of supply are wholly inadequate to the wants of plants upon most fields.

An acre of wheat yielding twenty-five bushels requires, in straw and grain, forty-five pounds of ammonia. The results of careful experiments show that under the most favorable circumstances no more than ten pounds of ammonia is ever supplied to an acre of soil by rain-water ; so if all the ammonia of

the rain-fall is assimilated, thirty-five pounds in addition would have to be supplied to meet the wants of the wheat-field.

Carbon, the agent so largely consumed by plants, fortunately costs us nothing. The farmer need not trouble himself concerning this important element in plant-food, for the atmosphere furnishes an abundant supply for all our wants. It is supplied in the form of carbonic acid, and we do not know that it can be assimilated through any other carbon compound. A carbonate, unless it be of potash or soda, is practically valueless to the farmer. Carbonate of lime, in any form, cannot be regarded as a fertilizing substance having a commercial value. Very strenuous attempts have been made to induce farmers to purchase ground clam and oyster shells, the vendors alleging that they were equal to ground bones in fertilizing value; but this is a fraud of a serious nature. Clam shells are composed of carbonate of lime, while bones are made up of the phosphate of lime—quite a different substance, chemically and agriculturally considered. The shells are composed of carbonic acid and lime, the bones of phosphoric acid and lime,—the former acid having no money value, the latter having a high value.

Calcic carbonates should not be confounded with sulphate of lime, which is plaster or gypsum. In this substance sulphuric acid or oil of vitrol is in combination with the lime, in place of carbonic acid, and a very different chemical and fertilizing agent is supplied. It has high value as an application to some fields, although its action is not well understood. The experiments which the writer has made with plaster go to prove that its good effects are due rather to the acid than the lime. It has the power of fixing the ammonia of the atmosphere and forming sulphate of ammonia, which is a salt of much value. In applying gypsum to soils, it must be remembered that but a small quantity can be made available in a season, as it requires nearly five hundred pounds of water to bring one pound of it into solution. Half a ton is a sufficient dressing for an acre of ground.

The element hydrogen is freely supplied to plants by dew, mist and rain, and therefore is costless to the husbandman. It is only through water that hydrogen can be presented to the plant, but this is by no means its only important office. It enters the plant as water, and it is through its agency that all

the various forms of food are rendered assimilable. It is the liquid medium which holds all the inorganic substances, and from the aqueous current which unceasingly flows through the little cells of plants, they are absorbed and appropriated as food.

Enormous quantities of water annually descend upon the land. If the rain-fall be but twenty inches per annum, it corresponds to something like two thousand and twenty tons of water falling upon each acre every year. Much of this is carried off by evaporation or through drainage. Still a large proportion is retained by growing plants or passes through them, aiding in most important functions. It can be shown that a gallon of water passes through a single plant of wheat in a season, and the aqueous exhalations from the broad disc of a common sunflower each day amount to six or eight ounces.

The wonderful substance (formerly rare and costly), phosphorus, is so essential an ingredient in the food of plants that not one of any kind can flourish without it. This highly combustible body, so offensive to taste and smell, and withal so poisonous, enters the plant in combination with oxygen, with which it forms phosphoric acid. The entire supply of phosphorus employed in the arts comes from plants, and they hunt it from the soil atom by atom, and incorporate it into their structures. Animals feeding upon plants abstract the element, and it takes its place in the bones in combination with lime, forming basic phosphate of lime. We gather the bones of the dead animals, and, after calcination, subject them to chemical treatment, and thus isolate the phosphorus in a pure state in large quantities. How curious is this cycle of changes and transformations! We can in no way obtain a clearer conception of them than by reflecting upon the fact that the phosphorus found upon the end of every friction match we use in our dwellings has been gathered from the soil by vegetables, and passing through their organization it has taken its place in the bones of oxen, cows or horses, and from thence passed into the laboratory of the chemist, where it is fitted to subserve the most useful purposes. If this substance had a tongue, what an interesting history of adventures it could unfold!

The amount of phosphorus or phosphoric acid in the soil is usually insufficient to meet the wants of the plant, and hence the farmer must furnish supplies if he wishes to increase his

crops. Formerly there were but two sources of supply, that from manure or animal excrement, and that from the bones of animals; but now we have a third source in the phosphatic deposits found upon the coast of South Carolina. From these substances what are popularly known as superphosphates are made and sold largely in the market.

Potash holds a most important place in the list of substances consumed by plants, and hitherto much anxiety has been manifested regarding a supply equal to our wants. A few years ago we were acquainted with no sources of the agent save that of the ash of plants; and as mineral coal came into use for furnishing household warmth, wood ashes and the potash salts obtained from them became very scarce and costly. Every year the farmer removed from the soil large quantities of potash in his crops which he could not return again through the excrement of his animals, and therefore it was evident his lands were becoming impoverished to an alarming extent. High cultivation, as respects potash, increases this impoverishment, as all cultivated plants are richer in this substance than those growing spontaneously. To obtain a clear understanding of the needs of the soil, it may be stated that an acre of wheat producing twenty-five bushels of grain and three thousand pounds of straw, removes about forty pounds of potash in the crop. Can any farmer conceive of that amount of potash existing in the soil of any one acre of land upon his farm? We know it must be present and within easy reach of the plants, else not a blade of wheat can grow and mature the seed. Nearly all soils of course contain potash, but the quantity is often insufficient for crops of any of the cereal grains. A crop of corn of one hundred bushels to the acre removes, in kernel and stalk, one hundred and fifty pounds of potash and eighty pounds of phosphoric acid. We cannot raise large crops of corn without furnishing potash in some assimilable form; for a small crop of fifty bushels to the acre requires about seventy-five pounds of the agent. A fair crop of oats, say fifty bushels to the acre, removes only about thirteen pounds of potash. Barley and rye remove not far from thirty pounds each.

Now we have observed the great deterioration in our potato crops during the past ten or twenty years; and what is the cause of this alarming decrease of tubers? Can chemistry

point out the reason, or aid in remedying the difficulty? I think it can; and in order to understand the matter it is necessary to understand the kind and amount of food which the potato demands. A field of potatoes yielding three hundred bushels to the acre will remove from the soil in tubers and tops at least four hundred pounds of potash; also it will remove one hundred and fifty pounds of phosphoric acid. Now these amounts are very large, and show that the potato plant is a great consumer of the two substances, and also show that in order to restore our potato fields to their former productive condition, we must supply phosphatic compounds and substances holding potash in large quantities. For six or eight generations in New England our fathers have been exhausting the soil, by removing these agents in their potato and other crops, and we have reached a time when the vegetable is starving in our fields for want of its proper food. Our farmers have found that new land gives the best crops, and this is due to the fact that such fields afford the most potash. But so long as we crop our pastures so unreasonably, we cannot resort to new land, as land is not *new* that has had its potash and phosphatic elements removed by grazing animals. A potato field which gives but one hundred bushels to the acre requires at least one hundred and forty pounds of potash, but by allowing the tops to decay upon the field, sixty pounds are restored to the soil again, as that amount is contained in them. A medium crop of potatoes requires twice as much phosphoric acid as a medium crop of wheat, so that in two years with wheat the land is deprived of no more of the agent than it loses in one year with potatoes.

The aim has been in what has been said, to point out the nature of the materials which plants require, and to impress upon the minds of soil cultivators the great truth that, when they have gained this knowledge, and also learned the quantity necessary for a given crop, the accumulation and use of these materials are as simple as supplying raw materials for making cloth, boots and shoes, or any other manufacture. A field in proper condition for culture should contain, in ample abundance, all the inorganic materials which the intended crop requires, and these materials should be in an assimilable condition, or in other words, they should be in a soluble condition, so that by the aid of water they can be taken up and carried through the

plant organism. The proper manures for wheat and corn are the nitrogenized varieties, or those which hold nitrogen, either in the form of ammonia, or as nitric acid. These should be conjoined with phosphates and potash in considerable amounts. For potatoes, potash, phosphates and lime are required; the latter element, lime, enters largely into the leaves, and is an important article of food for the vegetable. Gypsum, or plaster, which holds lime and sulphurous acid, is a valuable manurial agent for potatoes, especially on moist land. Enough has been said to show that each variety of plants demands peculiar kinds of food, and unless this is supplied by the soil, or through our agency, it is impossible for them to flourish.

The sources of supply of food adapted to the wants of plants, are, for the most part, well understood; still, it may be desirable to devote a few moments to the consideration of this most important subject. We must constantly bear in mind, that there are but three substances consumed by plants which bear a high commercial value, or which, in other words, are of a costly nature. These are *nitrogen*, *phosphoric acid*, and *potash*. The soda, iron, lime, &c, are not substances which, in the amounts demanded, should receive much consideration in estimating the cost of fertilizing material. They are essential, but the soil supplies them usually in sufficient quantities, and when this is not the case, they can be furnished quite cheaply. Animal excrement holds all the substances which plants require in an assimilable condition, and if enough was furnished to meet the wants of agriculture, we should have no occasion to seek for plant-food in other directions. It is best for the farmer to bend every effort to increase his supplies of excrement, and to utilize every pound of excrementitious material from house, barn and stable. It is presumed that all sensible, thrifty farmers do this; and still the want of further supplies of plant-food is most decidedly felt, and anxious inquiries are made as to how the want may be met. I presume it is well known to many of those whom I have the honor to address, that during the past nine years I have endeavored, by extended experiment on a farm, in Essex County, to show that fields can be fertilized and sustained in good tilth by the use of the agents holding plant-food, excluding animal manures altogether. In addresses at former meetings of the State Board,

and before other bodies of husbandmen, I have presented some of the results of these experiments, and as they have been published and read extensively, I do not feel that it is necessary to allude to them any further than to say, that each year, or each successive crop upon my farm, affords additional proof that properly prepared chemical or manufactured fertilizers can be used economically, and with a certainty of favorable results upon our fields. I have raised three tons of hay and three hundred bushels of potatoes to the acre, the past season, upon fields to which not a pound of animal manures had ever been applied. My corn-field gave me, this year, a little more than one hundred bushels of shelled corn to the acre, but this received a moderate dressing of cow dung, with a mixture of bone and ashes applied to the hills. The hay crop upon the farm, the present year, which has been characterized as one of the driest and most unfavorable ever experienced, was rising sixty tons,—an increase over the preceding year of more than ten tons. I give these brief statements to show that the experimental labors commenced nine years ago, continue to afford gratifying evidences of success, and are well calculated to settle some important controverted points in husbandry.

And now let me briefly consider the inquiry of the farmer, who, after exhausting all his supplies of barnyard dung, offal, house waste, &c., asks how and where he can obtain a further supply of plant-food. Shall he be sent into the market to purchase the commercial fertilizers of which the market is full? There are reasons for hesitating to do this.

I have said so much in public addresses and through the journals upon commercial fertilizers, that I ought not to dwell upon the subject here. But I must be permitted to say that the persistent exposure of frauds, and the explanations of the true nature of fertilizing compounds, has had the effect to improve them,—some in an important degree; still, they are generally not what they should be, regard being had to quality and price.

During the past four months we have devoted much time, in the analytical department of the laboratory in my charge, to the careful qualitative and quantitative analysis of the different brands of superphosphates and fertilizing mixtures found in the market. It is the intention to continue these researches, until all the products of the prominent manufacturers have been sub-

mitted to examination, and then the results will be published. It is believed that if the sale of commercial articles is to continue, the exact value of each substance should be understood by purchasers.

In order to show how farmers are subjected to loss in the purchase of manufactured fertilizers, I will present the average cost of seventeen of the most popular superphosphates, the cost having been ascertained from accurate analysis of samples found in the hands of dealers. A portion of these analyses were made in my own laboratory, a part in others, where were obtained unquestionable accuracy of results.

The money value of the seventeen superphosphates averages \$16.35 per ton, and the average price at which they are sold by dealers, is \$51.25 per ton. These results give an average loss to farmers, upon every ton purchased, of \$34.90. Some of the superphosphates, so called, cost the manufacturer less than \$10 a ton, but they had a selling price of \$50 the ton. The highest cost of any one specimen was \$36, which is sold at \$60. The loss to the farmer on a ton of the former would be \$40, on the latter \$22. Now it is evident that none but the most wealthy farmers can afford to buy these products; and it is equally evident, if they purchase many of them, their more sensible neighbors will soon find them objects of support in the poor-house.

A considerable number of these are sold largely in the Southern, New York, Baltimore and Philadelphia markets, and are less known in Boston. The superphosphates, so called, which hold a prominent position in Massachusetts and throughout New England, are what are known as "Bradley's" and "Upton's," and are manufactured in Boston. I will present the results of analysis made in my laboratory, in September, of these compounds. The specimens were procured at the warehouses of the manufacturers, under circumstances to preclude the possibility of deception, and therefore they may be regarded as representing the articles as offered for sale.

Bradley's extra superphosphate held in one hundred parts—

Water,	.	.	.	.	.	.	9.76
Organic matter,	.	.	.	.	.	.	41.71
Inorganic,	.	.	.	.	.	.	48.53
							———100.00

Of the inorganic matter 4.99 parts consisted of sand.

Soluble phosphoric acid, . . .	7.02
Insoluble, " " . . .	12.44
Nitrogen,	2.12

This result shows that the superphosphate holds nearly fifteen per cent. of water and sand. It is, however, to be considered, that it is quite impossible to drive off all moisture in manufacturing, and the sand may be an accidental ingredient. In estimating the value of Bradley's superphosphate, if we regard the insoluble phosphoric acid as worthless, as is the practice of some chemists, it reduces the value of the compound to a low point. But this I must regard as erroneous and unfair; it has a positive value, although I do not agree with Prof. Johnson, in estimating it as high as six cents a pound. It is worth to the agriculturist a half that sum, three cents, and the soluble may fairly be estimated at sixteen cents a pound. The nitrogen has a fair market value, based on the price of nitrate of soda and sulphate of ammonia, of about twenty-eight cents. Estimating the superphosphate from these prices of plant-food, the value of a ton is about \$36. That is, the manufacturer supplies in each ton thirty-six dollars' worth of plant-food, a considerable part of which is available. The retail price is sixty dollars the ton. This superphosphate certainly contrasts favorably, as regards money value, with many others found in the market.

The Upton phosphates are five in number, all of which have been examined. They hold of water, respectively, eight, thirteen, twenty-one and twenty-five per cent., not reckoning fractions. These amounts are all large, two of them being excessively so. No one of them contains a trace of soluble phosphoric acid, and the amount of insoluble is represented as follows: No. 1, 12.44 parts in 100; No. 2, 15.89; No. 3, 17.02; No. 4, 11.21; No. 5, 11.80. No. 1 contains of nitrogen, 2.12; No. 2, 1.59; No. 3, 1.55; the others none. No. 3 contains 2.38 parts of potash.

Mr. Upton is a well known and highly honorable gentleman, and he states that the making of fertilizers is incidental to his business as glue manufacturer, and that he makes as good an article as he can afford at the prices at which he sells his

products. Whilst it is desirable that more care and uniformity should be observed, and some modifications adopted in fabricating these compounds, the statements made by the house may be regarded as essentially correct. The usual price for the so-called superphosphates is about \$60 the ton; the Upton compounds are sold at \$28 and \$30 the ton, and from an estimate of the value of the plant-food they contain, based upon the analysis, two or three of the varieties are sold at fair market rates. One important point to be kept in mind in regard to commercial fertilizers is, that different parcels are of very unequal value. The chemist is able to give the exact value of a specimen taken from one parcel, but he cannot assure farmers that the article they purchase of the same brand is of equal value. It may be better, or, what is quite as probable, it may be much worse. The purchase of commercial fertilizers is full of risk, under the most favorable conditions, and I cannot point out a way by which it may be obviated. Our State system of inspection and analysis is a kind of legalized quackery, which has fallen so far beneath contempt, in the view of respectable chemists, that it is never alluded to in any estimates of the value of the compounds that are offered for sale. The statements of values, put upon packages, if in any sense accurate, are so presented that the purchaser is confused and misled. This device to protect farmers fails to have any practical value.

But after all, there are inherent difficulties in the business of compounding plant-food, that are worthy of consideration, and which lead to conclusions of an important character. The temptation to enter upon a manufacture, the products of which are of a nature not easily understood, and where there are opportunities for employing inert or worthless materials, is very great, and no wonder the business of fabricating fertilizers is crowded.

After much observation and thought upon the subject, I have reached the conclusion that it is difficult, if not impossible, for manufacturers to supply in a large way, through the ordinary channels of trade, superphosphates, or any compounded fertilizer, so as to give the farmer a just return for his money. The reasons for this conclusion are, that the elements of plant nutrition, or the three most important agents which should enter into fertilizing compounds,—phosphoric acid, potash and nitro-

genous bodies,—have a fixed market value, and the difference in price between their purchase, in moderate or large quantities, is not great enough to give to large manufacturers an advantage worthy the attention of honest men. A bag of nitrate of soda (three hundred pounds) holding nitrogen, or of kainite (chloride of potassum) holding potash, or a ton of bones or coprolites, holding phosphoric acid, can be purchased, at original sources of supply, at a cost but a trifle higher than is placed upon them when large amounts are taken. The margin of cost between large and small quantities of raw materials is not great enough, under usual conditions, to compensate honest men for preparing honest compounds, as the cost of manipulating and handling such heavy and bulky bodies is very great. This cost added to freight, and the commissions to middle men, wholesale and retail dealers, will consume a much larger sum than can be secured by advantages of purchase of raw materials. It is true the owners of sulphuric acid works, and of coprolite deposits, must have considerable advantage, on the score of cost, over those who undertake to manufacture fertilizers in a small way; but this advantage, I contend, is insufficient to afford satisfactory profits when good articles are produced. They do not secure the advantage of half a cent a pound on the acid, as that is a large manufacturer's profit; and a monopoly of any source of phosphoric acid potash, or nitrogenized products, is now almost impossible. A farmer preparing his own fertilizers has an immense pecuniary advantage over a large manufacturer. He can prepare them in seasons of leisure, when the time consumed in manipulation does not enter in as an element of cost. He saves the commissions paid to large and small dealers, he saves in cost of transportation, and he can purchase pure raw materials at nearly as good advantage as the manufacturer. Why should not the farmer prepare his own fertilizers? It requires but a small amount of skill; but if the farmer feels that he is not sufficiently well educated or experienced, he must remove these disabilities at once, by reading, study and experiment. The farmer of the period, to succeed, must be competent to prepare the food necessary for the plant children of his fields, or else he must expect to be left behind in the work of profitable husbandry.

It may be objected that purchasers of raw materials would be liable to become the victims of frauds, the same as when purchasing manufactured fertilizers; but such is not the case. As a source of nitrogen, nitrate of soda, in crystals, can be bought of importers with guarantees of a certain percentage of pure nitrate, and the crystals usually analyze from ninety to ninety-five per cent. So also the muriate of potash is sold with a guarantee that it is eighty-six or ninety per cent. pure, and these guarantees are quite reliable. Bone in flour, as a source of phosphoric acid, is the most hazardous to purchase; but whole bones can be secured, calcined and ground, and thus all risk is removed. Other sources of supply of the three great essentials of plant-food, do not offer any greater risks of deception than those mentioned.

Allow me to present a formula for a compounded fertilizer, which has proved of the highest value, and which can be readily prepared. I have used bone charcoal from the sugar refiners, as a cheap source of phosphoric acid, but burnt bones may be used instead, at about the same cost, and with fully as good results.

Take nine hundred pounds of bone charcoal, four hundred and eighty-six pounds of oil of vitriol, one hundred and seventy-one pounds of water; mix the water with the acid, and gradually add the bones, stirring the mass, that it may be fully acted upon. This affords a superphosphate which is dry enough to be ground, as soon as it is cool, and it can be ground in a plaster mill. To this add four hundred pounds of nitrate of soda, one hundred pounds of muriate of potash in powder, and we have a ton of fertilizing material, which I have found, upon analysis, gives 14.39 parts in the 100 of soluble phosphoric acid, 27.47 parts of soluble phosphate of lime, 2.8 of potassa, 3.14 of nitrogen. This gives twice as much soluble phosphoric acid as Bradley's compound, and more nitrogen. The cost of materials, at present market rates, will be about \$44. Its actual money value, estimating the active fertilizing principle, according to Prof. Johnson's prices, is a little more than \$68, but those prices are too high, and its value would be more correctly estimated, calling it \$57. This is a saving worthy the attention of every soil cultivator, and it affords a fertilizing compound of the highest efficacy.

But I fear to weary you by longer dwelling upon these points. They are, however, of the highest importance to the interests of agriculture, and should be attentively considered.

There has never been a time when soil cultivation, as a pursuit, was more hopeful or promising than the present. We have just learned the important fact that an abundance of plant-food has been stored up for our use in mines and rocks, and that we have only to reach out our hands and take all that we require. Ten years ago who could have dreamed even of such vast deposits of potash as have been opened up to us at Stassfurth salt mines, in Germany? Some idea of the supply may be formed from the fact, that at the present time more potash is furnished from these mines, than from the wood-ash sources of supply of the whole world. Only about thirteen thousand tons of potash were sent to market from the United States and British America in 1870, and yet from Stassfurth, where a dozen years ago it was not supposed that a single ton could be procured, thirty thousand tons of the muriate of potash were manufactured and supplied to consumers upon both continents, during the past year. The surface salts at these mines, which hold the potash, are practically inexhaustible, and millions of tons will be supplied in succeeding years. No doubt our own salt mines will be found, upon careful examination, to afford potash, and hence we may look with confidence to the rapid cheapening of this most useful product.

Ten years ago, who could have supposed that, along the river beds upon the coast of South Carolina, there were millions of tons of rocks holding that important element of plant-food, phosphoric acid? These rocks were indeed known, but their important character was not understood. The phosphatic rock beds of that region extend over an area of several hundred square miles, and in some places they are twelve feet thick. It is estimated that from five hundred to a thousand tons underlie each acre. How vast is this supply of an agent of the highest importance to agriculture, and what a source of national wealth it opens to us!

Two important considerations force themselves upon our attention. One is, that nature has provided ample materials to supply all our wants. In mountains, and caverns, and streams she has deposited all elements and combinations which are

essential for our well-being and progress, and it is unreasonable and wicked to doubt regarding the future. The other is, that science must be sustained and fostered, for it holds the key which is alone capable of unlocking nature's storehouses, and bringing forth from the dark recesses of earth those rich materials which have been provided for our sustentation and happiness.

The CHAIRMAN. I apprehend that we are all well satisfied with this lecture. It has given us just the information we want at this crisis. A great many of our farming friends are complaining of the lowness of the price of certain products, and that the prospect for the farmer is very discouraging. And when we add to the low price of our products, the high cost of labor, and the amount of taxes we have to pay, there is naturally some discouragement, and therefore it is a source of great satisfaction when we find that we can get information from such a source as we have obtained it to-day, which will enable us to cultivate our farms at a cheaper rate, and thus secure an increased profit.

We all know that within a few years, there has been a great advancement in this matter of scientific agriculture. In old classic times, the people knew nothing about scientific methods of cultivation, and there were various devices practised to insure a good crop. For instance: it was considered that the best time to plant was on the full of the moon; and it was considered that a very certain way to propagate vegetables was by planting asses' heads in the middle of the garden. Unfortunately, all the asses' heads were not buried in that way, and a great many have been braying ever since against scientific agriculture. But we have seen that, through the means of agricultural colleges, and through the means of gentlemen like the lecturer before us, who have taken up scientific agriculture as a pursuit, great benefit has been derived by our farming community. I think it will strike you now, as it has heretofore struck us, when we have had lectures of a similar character, that there is no more certain way to advance agricultural pursuits than for each man to try the experiments which have been mentioned, especially in relation to manures.

In the region where I live, we find it impossible to get along without a certain amount of artificial manures. We cannot

get together enough animal manures to grow our crops; and in addition to that, we want something to start them with, and every farmer in our region finds that his crop is increased, is driven ahead, and gets beyond the reach of frosts, by the use of some of the phosphates. We find that we are not successful in raising large crops if we do not put some manure in the hill. But these things are ordinarily so expensive that it is only occasionally that farmers are using them in large quantities. Now, if we can obtain them in the methods which have been mentioned, we can increase our crops at very small expense, and our farms will be generally benefited.

Now I want to remind you that the whole subject is open for discussion. It is true, we cannot all discuss it in the scientific method which the lecturer has followed. It is a good deal like the alphabet, that the boy said he knew by sight, but he couldn't tell the names of the letters. But we have practical knowledge of certain matters connected with our farming operations, which will prove profitable themes for discussion this morning. In the first place, there is the subject, sometimes discussed, of the value of gypsum. We have found it very necessary to use a great deal of gypsum—plaster of paris. We find it of great advantage to us in the spring upon certain soils. Then is a question whether it can be used to advantage upon any soil except those which are dry. Then there is another question in relation to hard-coal ashes. A great many farmers throw away their coal ashes; and as coal is being used all through our farming region, the question has become one of very great importance, whether some use cannot be made of the residuum of our furnaces. I have heard gentlemen say that they have used coal ashes with very great advantage. They have found that coal ashes, put around their fruit-trees, produced results which they did not anticipate. In Pennsylvania where bituminous coal is consumed, we find some crops almost entirely manured by those ashes. When I was there, this last season, I saw some potatoes that were raised with no other manure. I had no doubt, from what I saw there, that those ashes were of some value. Then in relation to bones. A great many farmers have found them to be, in the end, the cheapest manure, and the most lasting in their effects, even when used in the natural state. We know that in the old country, their

pasture lands are kept up, with comparatively little expense, by giving them bones, in quantities such as we should never dream of—a ton, for instance, to the acre; by which they say their cattle thrive better, their pastures are kept up better, and they find that the cheapest mode of fertilizing them. We use them differently. We find that by ploughing in bones, on new land, we can improve the land, until we have time to make animal manure.

These subjects are all open to us, and Dr. Nichols has always been kind enough to answer the questions put to him, and I have no doubt he will be ready to do so now.

Mr. HYDE. I will ask Dr. Nichols how he would apply potash to potatoes?

Dr. NICHOLS. At present, the cheapest source of potash is the German muriate of potash. I have just received a few tons of it. You can obtain it in Baltimore, of Mr. ———, who is the agent of the German importers. It costs me, set down upon my farm, about \$54 a ton, and it analyzes ninety per cent. muriate of potash. Reducing the potash down to the oxide of potassium, that would make it cost about 3 $\frac{7}{8}$ cents a pound. The ordinary commercial potash cannot be bought for less than seven or eight cents a pound. The best article is worth nine cents. If any one wishes to have as much as a ton, I would recommend him to send to Baltimore and obtain it there. I think it could be landed anywhere in Massachusetts at less than \$60 a ton, and in combination with compost it is very excellent indeed. But if you wish to use the ordinary potash of commerce, the best way is to get a large iron kettle and dissolve it, and then add to the solution a quantity of dry muck, of course making an estimate of the number of pounds that you use and the bulk, and then use that in your compost heap.

Mr. HYDE. Would you mix the first you spoke of with muck also?

Dr. NICHOLS. Yes, sir, I would add that.

Mr. HYDE. How many cords of muck to a ton of the potash?

Dr. NICHOLS. I do not attenuate it very much. You can attenuate it down to any extent you choose, but you would make the bulk so large that it would be inconvenient to use it. You want to make the bulk considerable. I find it is an advan-

tage to use all these concentrated fertilizers with muck, in order to increase the bulk. Of course we cannot get any particular benefit from the muck that we use; we do a little, but it is very trifling. But it is very useful to extend these very powerful commercial fertilizers, for it enables us to use them more conveniently over our fields. I use it in that way, because it is very much more convenient; but I would not advise you to use muck very largely, because, if you are going to haul it upon moist land, of course you meet with difficulty. You want something that you can take readily upon your meadows, and sow it in that way. The formula I have given here I have found to be very excellent. It may be that some will feel that it is too troublesome to make these superphosphates that I have indicated here, but I cannot help thinking that we can all do it; it is very easy and simple. I really wish I could have all the gentlemen here with me half a day; I think I could show them the whole mystery of the thing. I have found so much benefit from that product, that I really wish everybody could make it.

Prof. CHADBOURNE. How much of the muriate would you apply to the acre, as a top-dressing?

Dr. NICHOLS. It depends upon the crop.

Prof. CHADBOURNE. I refer to grass lands.

Dr. NICHOLS. I use the nitrate of soda for grass land. We need the nitrogenous element for that. For my cereals I usually average my compost so as to give about one hundred and fifty pounds of potash to the acre. On a worn-out field I should use more. I should exercise my judgment about that. Nitrate of soda can be bought for about $3\frac{1}{2}$ cents a pound, which will analyze about eighty-five per cent. I think that is a great deal cheaper.

These things, gentlemen, are all very hopeful. I always have a certain feeling of embarrassment in bringing these matters before my farming friends, because I do not know how they may strike them. My object has been to show what great encouragement we have. I hesitate to give formulas; I hesitate to state positively what you can do; but I have no hesitation in saying what can be done, and what I think every one can do; but it requires a little experience and a little patience. I think you cannot fail to see that the future is hope-

ful—much more so than when I gave my lecture in Salem three years ago. I was thinking, as I came into the hall, of an expression that I used in 1868, in relation to the sources of supply of plant-food. I said then that I could not point out any satisfactory source of potash or phosphates. I was aware then that the Stassfurth mines, in Germany, were producing considerable quantities of potash, but none of us understood then the extent of those deposits, and therefore I made that observation with a feeling of deep regret that I could not point out any sources of supply for these very important elements of plant-food. But now, as I come here to-day, only three years having elapsed, I am enabled to say that I can point out sources of potash and phosphoric acid which are inexhaustible. I think that is very hopeful. And we have also made great progress in the combining of these things. We have disturbed those men who are engaged in the business of making fertilizers. We have really frightened them into making a better article, which yet is very poor. I really would like to have you see the character of the letters I get from all over the country, in relation to this matter. I have one in my pocket from a gentleman who is manufacturing a fertilizer very largely. He says he meets with certain difficulties, and proceeds to give the formula from which it is made, and wishes to be instructed in certain matters about it. I was so filled with contempt on reading it, that I have not answered the letter. To show the deception, I will say, that he was actually making the fertilizer at a cost of \$7.50 a ton, of which he frankly confessed he was selling large quantities for \$50 a ton. I think it is high time this kind of fraud was stopped.

MR. BUFFINTON. I use this potash, and the way I mix it is this. I have the street scrapings of the main streets of the city drawn down to my place, and then I have hogsheads placed as near the heap as I can, into which I conduct the water from the sink drain, and fill those hogsheads, and put in from fifty to seventy-five pounds of this crude potash, mix it, and then throw it on to this heap, so that I get one hundred or one hundred and fifty pounds of the potash to the acre.

This matter of potash is a very important one in this vicinity. I am satisfied that all our land needs it, and it is about the only cheap manure that we can get hold of. I have found one

hundred and fifty pounds to the acre too much for potatoes. It acted like an acid in the hill, and made the skins rough. I have reduced it down to fifty pounds, and it increased the crop from one hundred to two hundred or three hundred per cent.

Dr. NICHOLS. The matter of dollars and cents, of course, overrides everything else. We farm, not for pleasure, but profit. In addition to sources of supply, we want to find the *cheapest* sources. I suppose the gentleman pays $7\frac{1}{2}$ cents a pound for his potash. Wood ashes would be cheaper, if he paid thirty-five cents a bushel.

Mr. BUFFINTON. I cannot get them for less than forty or forty-five cents a bushel, with a great deal of coal ashes mixed with them.

Dr. NICHOLS. I should hope no one would sell wood ashes for less than forty cents, because, from a bushel of wood ashes, you get four pounds of potash, and then you have some soda, a considerable amount of soluble silica, and a very considerable amount of phosphate of lime. You have the material in a bushel of ashes that really makes its money value as high as forty cents.

Dr. DURFEE. In what way would you manage these ashes, if you had plenty of them? I have plenty of them, and I should like to know how to use them to the best advantage. I have been buying ground bone and making a compost. The ashes eat up the bone, and I find it makes a most excellent dressing for land, especially for vegetables.

Dr. NICHOLS. Well, doctor, you cannot make much improvement upon that. You see, in mixing ashes with bone, you get all the essentials of plant-food. You get the gelatine in the bone; you get nitrogen, potash and soda; what more can you have? I have for several years recommended that mixture, and some have told me that it did not succeed very well upon corn; but I have found that they did not use judgment in its application. They would drop the seed upon the fertilizer, and in that way destroy the germinal principle. A considerable quantity of earth should be put upon the compost before the seed is dropped. I think that the use of half a handful in a hill brings the corn up quickly, and makes a magnificent growth. I consider that it is a very profitable fertilizer to use

upon corn. I think you are quite right in your manipulation of ashes.

I will say a word in relation to leached ashes, in which I presume there may be some interest felt. Of course, when a soap-boiler leaches ashes, he leaches out everything that is soluble in hot water, and of course he removes a very large portion of the soluble potash and soluble soda, and those are the two important elements that he removes. He leaves the phosphoric acid, he leaves a certain amount of soluble silica,—that is, it is soluble to plants,—and he leaves the lime ; and, upon the whole, he leaves a considerable amount of fertilizing substances in his leached ashes. Now, as regards the value of leached ashes, I think I said last year, that I regarded them as worth from fourteen to seventeen cents a bushel, but I cannot, of course, state the precise value, because some soap-makers will rob them more than others. I have never been able to find two specimens exactly alike. Some soap-makers will manipulate them longer, and exhaust them more thoroughly ; but I think leached ashes a very cheap fertilizer, at about one-half the price of dry ashes.

Mr. BUFFINTON. What is your idea of the quantity of ashes to be used on an acre ?

Dr. NICHOLS. I should estimate dry wood ashes as having four pounds of potash, and make my application in accordance with that estimate. I should say twenty-five bushels to the acre would give it a very good dressing ; fifty would perhaps be better.

Mr. BUFFINTON. Fifty would be better than a hundred ?

Dr. NICHOLS. Yes, sir, I think that fifty would be better than a hundred.

Mr. BOISE. I would like to ask the doctor if he can tell me the difference between the hard, gray plaster, and the new variegated plaster. We have generally used, in our section of the State, the hard, gray plaster, and that has proved very beneficial. A year ago last winter, I was shown some plaster at the Southville station, on the Boston and Albany Railroad, which was variegated in color, and which was spoken of as much more valuable. I obtained some last season, and tried the two kinds side by side, and I could see a marked difference in favor of the soft, variegated plaster.

Dr. NICHOLS. I think that is quite an important point. The gray plaster is made gray by a little trace of iron. I bought twelve tons of plaster the past autumn, but I did not buy it until I had made an analysis of it. Some plaster is largely carbonate of lime, which is an adulteration of sulphate of lime. The real, genuine plaster, is sulphate of lime. The gray tinge in plaster is due to iron. I have observed that there is less carbonate of lime in this gray tinged plaster than in the other. The trace of iron in it is not of any very great consequence, but I find that wherever there are traces of iron, there is less of the carbonate; there are not so many veins of carbonate running through. So that even in buying plaster, I think it is quite important, if we are going to buy a very large quantity, to have it analyzed.

QUESTION. How is the manurial value of the phosphates obtained from those Southern rocks?

Dr. NICHOLS. These phosphatic deposits at Charleston analyze about sixty-five per cent. of phosphate of lime. I found that the specimens of superphosphate, made from the Charleston phosphates, were poor; that the powder was not properly acted upon by the acid. Now, if you buy a bag of these phosphates from Charleston, and only half as much sulphuric acid is added to it as it ought to have, the other part is of no more value to you than sand; it is an entirely inert element, so far as plant-food is concerned, unless it is changed by sulphuric acid; therefore, the manufacturers of these phosphates at Charleston, S. C., can deceive by not properly manufacturing them. I have found some specimens where one-half of the superphosphate was wholly inert. You may take that Charleston rock, powder it up and put it on your land, and it will have no more effect than so much sand; it is perfectly insoluble. But when that powder is acted upon by sulphuric acid, you liberate the phosphoric acid, and then you get a superphosphate that will tell upon your land. I think that fact shows very clearly the value of chemical experiments. You can see what a miserable product can be made from a good material by improper manipulation. I am told that they are now grinding up these Charleston phosphates in Connecticut, and using what is called "chamber" acid,—that is, sulphuric acid, before it is concentrated,—to act upon the phosphates; and I apprehend that they do not

change more than one-half of the powder, leaving the other half entirely inert. You may put it upon your ground, and it will remain there as long as you live, and you will never get any benefit from it. But of course, these deposits are very wonderful. I know of nothing so interesting. I think they show us that the Almighty is very watchful over our interests. I think we cannot escape from the conviction that these things are all provided for us. I did not suppose it possible that a source of phosphoric acid could be opened to us equal to that in South Carolina ; and it is a mystery now how those deposits happen to be there. A number of theories have been advanced to account for it, but it is still a very great mystery. The deposit is perfectly immense, and I think the supply of potash at Stassfurth is equally great. It shows, I think, that as civilization progresses and science is developed, all those things are opened up to us. I never have doubted, for a moment, that a sufficiency of plant-food would be provided for us. Of course, we cannot expect to obtain animal excrement enough to meet our purposes ; we must resort to these sources of plant-food, and we must all of us do what we can to bring them out, and develop the inestimable gifts which the Almighty has provided for us.

Mr. BUFFINTON. Is there any real manurial value in the shells that come in the phosphates, if ground up and put upon the soil ?

Dr. NICHOLS. Oh, no, sir.

Mr. BUFFINTON. I had some at home, and tried the experiment, and could find no evidence of any benefit from it.

Dr. NICHOLS. Not at all. It is so firmly locked up that you might as well put on sand, or any other inert substance. But by chemical manipulation, by the use of sulphuric acid, of course you develop it, the same as you do in the case of bones.

Mr. BUFFINTON. Those deposits were no doubt made from mussels or shell-fish. Why should not our oyster shells be valuable, if put through the same process ?

Dr. NICHOLS. No, sir, that is not the source of them. The theory I have in relation to them is this, and I think my idea is supported by the deep-sea dredgings that have taken place on our coast, in charge of our Coast Survey. I think the deposits of these phosphates have been going on for ages, and are going

on still. Those deep-sea dredgings have shown that the bones of the sea-cow, which are carried down the River Amazon in very large quantities, are swept by the ocean currents into deep-sea basins, and they accumulate there. In the bones of these animals and some others, the phosphates are abundant; but you will never get phosphates from a clam shell or oyster shell. Those are carbonates of lime. If that was the source of those deposits, it would be very easy to account for them; but it is not so.

Mr. BUFFINTON. We dig the muck out of the river here, where we have a great many shell-fish, and we find it makes a very good manure.

Dr. NICHOLS. Oh, yes, sir; that is nitrogenous. You get nitrogen from those deposits.

Dr. DUFEE. About a year ago, my gardener took the pains to dig up his grape border and put in a large quantity of oyster shells. I would like to know what value there was in that operation; whether the doctor considers that that was of any utility or any usefulness to the vine, in the production of grapes? If I understand his remarks on the subject of shells, there is very little value in common oyster shells as a fertilizer.

Dr. NICHOLS. I would say, in relation to that, that there may be a slight advantage, a mechanical one, perhaps it might be called, if it be any advantage to keep the soil porous. I think if you should open your beds you would find that the little rootlets had run in around the shells and twined about them. The tendrils of vines love to twine about something; they will twine around stones in precisely the same way. But the amount of decomposition that goes on would not afford any especial nutriment. There would be no fertilizing influence of any account. Perhaps in a great length of time there would be a little developed, but it would not be sufficient to pay for placing them there. If there was any advantage, I should say it would be mechanical. It used to be quite common to place bones in grape borders, and inasmuch as the tendrils of the vines would twine about the bones, the inference was that they were serviceable. But I have taken up bones from a grape border that had been down twelve years, and I could not detect any loss that was appreciable.

Dr. DUFEE. In the early history of grape growing, I took all the dead horses I could find and buried them in the borders. I supposed there was some fertility about them.

Dr. NICHOLS. Yes, sir.

Mr. PHINNEY. I would like to inquire of Dr. Nichols whether he has examined, for his own satisfaction even, the value of the deposits that have recently been discovered in South Carolina. One of the largest manufactures in this State is in this immediate vicinity, large cargoes are constantly coming here, and it is likely that the article is quite generally coming into market; but how far it may be serviceable to the farmer is yet to be ascertained, I suppose. I should like to know how far he may have examined these deposits, to ascertain their value.

Dr. NICHOLS. I made an analysis of those rocks when they were first discovered, and of course I was incidentally made acquainted with the value of them; and I would repeat what I said before, that the whole value of those rocks to the farmer, depends upon the treatment. If they are properly treated, chemically acted upon, they will be valuable. I wish to make a distinction here between bones and these phosphatic rocks. We obtain phosphoric acid from bones, and also from these rocks; but in the case of bones, we obtain the nitrogen which is found in the gelatine of the bones. We do not get any of that element in those rocks; we simply get phosphoric acid. But I see no reason to doubt the high utility of those phosphates, if they are properly manufactured. The phosphoric acid that comes from those rocks is precisely as good for plants as that obtained from bones, but it must be liberated, and must be acted upon; and if anybody is half making them, or imperfectly making them, of course, if anybody buys these products, he will be deceived, he will be cheated. But if properly acted upon, the farmer will get a product that will be serviceable to his crops.

Prof. CHADBOURNE. What is the physical character of those rocks? I have never been able to examine them.

Dr. NICHOLS. The upper strata of those rocks have a considerable amount of shells incorporated with them, but as you go down deeper, those disappear entirely.

Prof. CHADBOURNE. What sort of shells?

Dr. NICHOLS. Small coast shells, that have been mechanically incorporated with them.

Mr. HARLOW of Shrewsbury. I have been exceedingly interested in this lecture and in this discussion. I have taken considerable pains to come to this meeting, thinking I should be paid by what I should hear, and I believe I have been. The subject which I particularly desired to hear discussed was the one treated this morning,—the food of plants, particularly the grass plants. I have followed farming for a few years, and I cannot make it pay, unless I have the grass crop. What I wish to ascertain is, whether any article can be purchased that we can sow broadcast upon our pastures and our mowing lands, and have more dollars come back than we lay out. I know we can apply ashes and plaster, but I wish something that will produce a greater effect.

I have tried some experiments in sowing ashes and bones. Coal ashes have been spoken of. Four years ago, I took quite a large quantity of coal ashes and sowed them upon a piece ten rods square. I have watched that piece closely ever since, and not an extra spear of grass has grown upon it. I also purchased a quantity of bone, as pure as any that could be found, ground very fine, and in seeding down a piece of land, I sowed it to barley, and applied the bone, five hundred pounds to a half acre, leaving strips where I put none. I don't think there was a spear of grass extra grew upon that half acre. Another experiment that I tried was this. I had a piece of pasture land of fifteen acres, that has been fed for a hundred years, I presume, and I do not know but longer. On four acres of that piece, I sowed about a hundred bushels of ashes, and there has more feed grown upon those four acres than upon all the rest of the fifteen. Unleached ashes is the only thing I have ever applied that has paid me what it cost. I hoped, in coming here, that I should receive information where to go to purchase an article that it would pay to sow upon my pasture lands and mowings.

Mr. BUFFINTON. A year ago last August, I was drawing some gas lime from the gas works, and I saw Dr. Durfee's team drawing away oyster-shell lime. I took it for granted it was going on to his land, and I thought if it was good for the doctor, it would be good for me, and I would draw some of it on to my land. I used it in the same way that I should plaster, and I am

satisfied that it is worth more than plaster, on grass land or in the potato hill. But when I came to inquire, I found the doctor did not use it for manure. I would like to ask the doctor what he does with the leavings of that.

Dr. DUFEE. I use it to stop the leaks in my retorts, where I make the acid for the print works.

Mr. BUFFINTON. Do you use the leavings on your land?

Dr. DUFEE. It goes in with the wood ashes. There is not a great deal of it. We use it simply to plaster up the iron retorts. It makes a very fine plaster to stop up the cracks where the gas comes out. We can stop them very readily by making this lime into the form of putty and putting it on. In setting our retorts, we use it as we would any lime,—use it around our fire-brick.

Dr. NICHOLS. We should always bear in mind this fact,—that there are certain articles which are not to be regarded as plant-food, and other articles which are to be regarded as plant-food. Take, for example, clam and oyster shells. I stand up here and say, that ground clam and oyster shells have no fertilizing effects upon plants. This gentleman (Mr. Buffinton) gets up and says, “You must have been mistaken, because I have gone down to the gas works, and taken the gas lime and put it on my land, and it has had a good effect!” Now just look at that. The shell lime you get there has been burned; the carbonic acid has been driven off; it is no longer carbonate of lime. You have now quicklime, and your land is benefited by quicklime. If you had taken those shells before they were burned, pounded them up, and put them on your land, the land would have received no benefit from them. You see they have been burned, and that makes a very great difference.

Mr. BUFFINTON. Have you not made the statement that oyster-shell lime was not worth anything?

Dr. NICHOLS. No, sir. It does not matter from what source we get our lime. I do not know that burnt oyster shells are any better than burnt marble. Many of our lands are very much improved by liming. In Pennsylvania they lime their lands very extensively, and I think that there are many of our Massachusetts farms that would be benefited by lime. If you can get any shell lime from the gas works, I think it would pay

for hauling ; but I would not advise you to buy oyster shells and grind them, and then put them on your land.

Then allow me say, as to the effect of coal ashes, that we must take a good many things into account. One gentleman says he tried coal ashes, and did not get any benefit. Now, if you use coal ashes from places where a large amount of wood or charcoal is used for kindling, you see you get a pretty large per cent., five or ten per cent., of wood ashes: two hundred pounds in a ton. That would pay for hauling. There is four or five per cent. of soluble matter in anthracite coal ashes, that is all; but spread upon moist land, meadow land, it will have about the effect of sand. If you cart a load of coal ashes upon a moist meadow, and cover that land with the ashes, I think it will usually have a good effect; and so will a load of sand have a good effect. It supplies silica, to some extent. I think we should take these things into account.

I do hope, gentlemen, that we shall not be misled about this matter of experiment ; if we are, we shall be the greatest sufferers. We want to keep in view certain principles in agriculture, and do not let us be turned aside from them. I feel sometimes that our agricultural papers make a mistake. In farming, there are certain points that I think we must assume to be settled. And when a thing is settled, we ought not to keep opening it up and bringing it back again into the field of controversy. But this is constantly done in farming. There is so much doubt excited by these experiments, which, if they were explained, really would amount to nothing, that we get a little confused. I do not know how we shall ever remedy this to any very great extent, but I think this meeting will remedy it to some extent. I think we want to settle down upon sure principles in farming. There are certain facts proved, and we must seize hold of them and hold on to them, and add something more to them as we can; and in that way we shall bring agriculture to as near a scientific basis as we can. That is the only way in which we can make progress. If we settle a fact to-day, and some man who does not know anything about it, upsets it to-morrow, we shall never make any progress. We must, in the first place, understand what plant-food is, and we do know what plant-food is. Then we must know the conditions under which it is assimilated, and we do know those conditions. Then we must not be mis-

led by supposing that a piece of iron or a clam shell or oyster shell is a manurial substance, when it is fixed and certain that it is not. We must cling to what we do know, and keep progressing.

Prof. CHADBOURNE. I think it was last year, or the year before, that I delivered a lecture before this Board that seemed to strike some as containing very strange doctrine; but it was mainly a recapitulation of experiments that had been tried in relation to farming, and tried under the very best circumstances that experiments could be tried, and the results were very wonderful in showing how little reliance we can place upon a single experiment. Now, I wish to say a word upon one point which the doctor has made. He says, when we have become satisfied on a single point, we ought not to bring it back into the field of controversy. That is true,—when we can become satisfied upon that point. But now another thing. He says that we are to bring agriculture down to a scientific basis, just as fast as we possibly can. I agree to that fully; but I think we are to take it for granted that agriculture is to-day very far from an accurate scientific basis, and that it will remain so for a great length of time. And I say this, because I feel the necessity of every man's studying his own farm. I insisted upon that in that lecture. Suppose I am told, for instance, that plaster, about which we have been talking this morning, is a good thing to apply to land. Well, I go home to Williamstown, and I know one piece of land to which I applied plaster, and I might just as well have applied sand or ground diamonds, if I had them, so far as any fertilizing effect is concerned. Right up above it, on the side hill, if you spread plaster on the land, you can see the effects of it clear across the town. I have considered that plaster is a fertilizer, and I go and put it on one place, and it produces no effect, and I put it on another place, and the effect can be seen, as I have said, clear across the town. Now, I come back and want this thing explained. I understand that plaster is a good fertilizer, and I did not understand, and do not understand to-day (I am honest about it), why it has no effect upon that piece of land to which I have referred. I feel that with all our science, and all the general rules we can lay down, there are still very many things which we do not understand. "The value of that observation," as Jack Bunsby says,

“is in the application of it,” and this is the application: that every one must study his own farm, and every single rod of it. And that is the reason I believe in agriculture as a thing for men who have brains, and who are going to cultivate their brains, because the time will never come when a man can go on a farm, and run it as a locomotive can run on the track. He must study it every moment of the time, from spring to fall, and every new farm he gets, he must study. A doctor who is called to visit a patient, not only studies the general principles of medicine, and seeks to apply them to that individual case, but he studies the patient, and tries to ascertain his characteristics, and in order to get hold of them, he endeavors to find what were the characteristics of his family back of him, and he brings them all to bear upon the particular case. If he does not do that, he is no physician. And so it is with the farmer. Every single farm must be studied by every man who would cultivate it to the best advantage, and that will continue just as long as this world stands; and I am glad of it.

Mr. STURTEVANT, of Framingham. I have tried plaster with great success on one piece of land, and I have tried it on another piece with no success. I can give an explanation of that which is satisfactory to myself. The land which did not show any result had a supply and required no more; the other piece required it for plant-food, and there I saw a result.

Mr. HYDE. If I may be pardoned a word, I will say, in relation to this matter of coal ashes, that some few years ago, when engaged in the nursery business, as well as farming, to some extent, it occurred to me that a great deal of coal ashes were going to waste, and that they contained some plant-food. I accordingly carted them, year after year, in considerable quantities. You may ask why I carted them year after year, when I tell you what result followed. The first year, the ashes were from red-ash coal. I did not think so much of it at the time, but I am satisfied there was a good deal of wood used in kindling the fires. I know that some of the fires in the houses where that coal was used were kindled daily. I afterwards carted the ashes from a village near us, where white-ash coal was used in the house furnaces, that are run for a month or two months together, or all winter, as I run mine, so that kindlings are used but two or three times during the winter, and very little wood ashes

made ; and I am free to say, that after very careful observation, year after year, without any analysis, for I am not a chemist, I came to the conclusion that it did not pay me to cart coal ashes a mile and apply them to my fields. Then I used them as an absorbent of night soil, as I would use muck or lime. I made my basis for night soil of coal ashes, and they answered a very excellent purpose. I then applied the compost as a top-dressing to my low grass land, and although I do not think I derived much benefit directly from the ashes, yet, used in that way, they were of some value to me ; but having muck in considerable quantity, I did not care to continue to use them for that purpose. Then I think coal ashes may operate mechanically on the soil, just as the oyster shells did that Dr. Durfee's gardener put into his grape borders. They helped the drainage of the borders, if they were likely to be too wet. So these coal ashes would act mechanically upon the soil in some instances, and might be of some use in that way ; but I have yet to learn that they have any real value that will justify the time spent in working them.

QUESTION. Would not sawdust have been just as valuable as coal ashes ?

Mr. HYDE. I am not competent to say. I have always avoided the use of sawdust and all substances of that kind, because I know that insects and worms injurious to vegetation resort to them as a safe harbor, and they would be introduced into my soil if I applied such substances.

Dr. DURFEE. I think we ought to say something about sawdust. I have seen a great many loads of it carted out of this city on to the farms to the east of us. It is used in the stables under the horses, and the stable-keepers sell it for manure.

Mr. JOHNSON. Can Dr. Nichols tell how much his corn cost per bushel this year ? I understand him to say that he raised a hundred bushels to the acre.

Dr. NICHOLS. I keep a very accurate account of my crops. I keep a regular set of books, and give them all the attention that is necessary. I estimate that my corn costs me forty-five cents a bushel, and I do not include in that the value of the corn fodder. I estimate half the fertilizing material that I use in the field in the cost of the corn crop. I have raised corn for seven successive years at a cost of forty-five cents a bushel, and I do not see why it cannot be raised in Massachusetts at that

price. I do not raise it under the most favorable conditions, because I am not able to cultivate it myself; I am obliged to trust that to others and pay them for it. I am certain, it is a matter of demonstration, that my corn has cost me but forty-five cents a bushel. In raising corn, or in raising any crop (I am only repeating a truism that you will all agree to) we want to get the most out of a small piece of ground we can. There is the secret of profitable farming. If you get a hundred bushels of corn from an acre, of course you get it at much less cost than if that hundred bushels were produced from three or five acres. I have a field of ten acres, which I intend to plant with corn next year. I do not intend to apply to it a hoe in any form. I am going to see if corn cannot be raised without the application of a hoe, and without the application of any manure, except such as I shall provide, of the description which I have given here to-day. I think that I shall be able to show, as I have been showing, that corn is a profitable crop to raise in Massachusetts. I do not see any reason why we should not plant corn.

Allow me to say a word in relation to corn fodder. I believe our good friend, Dr. Loring, has been somewhat sharply criticised, in regard to his remarks about corn fodder. I think the doctor is partly right, and perhaps partly wrong. I have made some experiments, the past two or three years, and especially this year, with corn fodder, and I find that corn fodder sown broadcast is perfectly worthless. I demonstrated that practically by experiments upon my herd of cows, and I demonstrated it positively by an analysis of the plant. The results of my observations and researches, up to the present time, have been these: that in raising fodder corn, we must allow it to reach a certain point before we cut it. In the first place, we must sow it in drills; it must have access to sunlight and air, and it must be allowed to proceed to a certain stage,—and that stage is the formation of the ear,—before we begin to cut it. Corn fodder fed to animals before that period will not increase the milk; and if the corn is sown broadcast, you may take your cows from a very poor pasture and keep them upon that fodder, and they will fall off in the supply of milk. The practical deduction from this is, that we must sow our corn, the sweet variety, in drills, and not sow it too thick, and we must sow as many as

two or three crops, so as to have it come along in the hot season, in August and September, when our pastures begin to fail, and there is a period of three or four weeks when this can be used with very excellent results, as food for milch cows. I think the corn fodder resulting from a field of corn is of very great value for milk. I have found that my cows always felt the influence of corn fodder, and I esteem it very highly ; but in estimating the cost of my corn, I do not include that, I call that nothing, although I think so highly of it as food for milch cows.

I should like to hear the experience of some of the gentlemen present, in regard to the cost of raising corn. I do not see why we cannot raise all the corn we use in Massachusetts. It seems to me that we ought to raise it. It is certainly a profitable crop, or has been with me.

Mr. JOHNSON. I will explain why I asked the question. Our Middlesex South Society have, for several years, offered a premium for the best experiment in raising corn, and this year the president offered a premium of fifty dollars for the best experiment. The chairman of the committee last year stated that he did not think corn could be raised short of \$1.50 a bushel, and the president of the society said he would give this premium of fifty dollars, for he wanted to know whether corn could be raised to a profit in Massachusetts or not. There were four competitors for the premium, myself among them, and we were of course obliged to keep an accurate account of the cost of the corn, and the committee were required to appoint some individual to superintend the harvesting, and weigh all the corn. Well, the corn varied in quantity, and of course in the cost. When the committee met to examine the statements and award the premium, the chairman again said that it was his opinion, notwithstanding it was stated that some of the corn was raised at less than fifty cents a bushel, that there could not be a bushel of corn raised in Massachusetts under \$1.50. He lives in the town of Southborough, and owns some of the most fertile land in the county of Worcester, and is a good farmer. His name is Peter Fay, and he is the man who sold the famous Peters farm to Mr. Peters. He has always been a farmer, and that was his opinion.

Now, I cannot state the figures in regard to the other experiments, but I can state my own. I raised ninety-three bushels

(fifty-six pounds to the bushel) of shelled corn to the acre. The corn was all weighed, and there were eighty-five baskets (seventy-two pounds to a basket) to the acre, which made ninety-three bushels, fifty-six pound to the bushel. I am not positive as to the cost, but I think it was forty-three cents and a fraction per bushel.

Mr. MOORE. When was it weighed?

Mr. JOHNSON. Two weeks ago.

Mr. MOORE. How much will it shrink before it is ready for market?

Mr. JOHNSON. I can't tell you. It will shrink considerably. But you will all be aware, that as the season has been, it must have been pretty well dried before it was cut up. I let it stand until I am satisfied that the corn was cured sufficient to crib and keep well, and the stubble also. It was husked and weighed before one of the selectmen of our town, and I kept close watch of the weight of the baskets, as he did, and there was not a basket that was not properly weighed. I was considerably excited during the whole time, for I knew what had been said, and I was watchful. I was glad to learn that the doctor had raised his corn at a price about corresponding to that. I hardly wanted to meet that corn committee, for fear they would think there must have been something wrong about that field of corn. Since I have been here, several farmers have estimated the cost of raising an acre of corn, and my friend from Upton, Mr. Knowlton, who has been a large corn raiser, estimated the cost at forty-two cents a bushel. In estimating the cost of my corn, I charged the crop with two-fifths of the cost of the manure,—fourteen cords to the acre,—and it left me a net profit of about eighty dollars to the acre.

Mr. BUFFINTON. What do you call the corn fodder worth?

Mr. JOHNSON. I call the tops worth three cents a bundle, which is the usual estimate. I do not consider them worth three cents a bundle, unless they are used as they are cut for the cows. I was unfortunate in the corn. (I may as well tell you the whole story.) I planted it the fifteenth day of May. It remained dry, and the corn did not come up well, and after the first hoeing I replanted, and got more fodder than I did corn.

One word about corn fodder. I am glad that has been spoken of. For three years I have planted my corn fodder early. I became satisfied that I got nothing for the corn fodder fed to my cows. I do not think I ever received a pound of milk for all I fed to them. But for three years, as I said, I have planted my fodder corn early, and let it stand until the ears began to form. The moment the ears begin to form, I begin to cut and feed to my cows, and I find that in this way I increase my milk. I was glad to hear that idea thrown out by the doctor. It corresponds, again, with my experience. I think it is science.

Adjourned to two o'clock, P. M.

AFTERNOON SESSION.

At the opening of the afternoon meeting, the chairman, Mr. GOODMAN, of Lenox, stated that the first subject for discussion was

FARM AND GARDEN VEGETABLES.

He then proceeded to open the discussion generally, as follows:—

There is probably no subject which is of more interest to the farmer, not only as a producer, but as a partaker of the good things of the earth, than this subject of garden and farm vegetables. We all know that "God made the country, and man made the town," and the first country that was made was fortunately a garden, and the first man, I am sorry to say, did as Charles Lamb said he would have done, "sinned himself out of it." And we find that that feeling has come down to the present day. There are a great many more people to-day who are willing to sin themselves out of farms and gardens, and rush to the cities, than there are people who are content to remain in the primeval paradise. Now, what we are trying to do as a Board of Agriculture, what the intelligent and cultivated men throughout the country, who are engaged in the pursuits of agriculture are endeavoring to do, is to restore this feeling; to make men believe that they can live as happily and pleasantly on their farms in the country, and fully as profitable, as they can live in the city. And this matter of profit is the one which strikes us most forcibly, in relation to the policy which we are to pursue in our farming operations.

It was a remark of Lord Bacon, that the scientific culture of gardens afforded a surer index of civilization than the advancement of any other science; and I apprehend that if we turn to the world's history, or review our own experience, we shall find, at least, that there is as much happiness in the cultivation of gardens as in any other employment; and the experience of gentlemen now in this room, when given to us, will show us that it is as profitable employment for the farmer, as any other branch of his business.

The cultivation of gardens is one of the oldest occupations in the world's history. Our friends in Utah, whose history was so eloquently given to us last night, were not the beginners in the great work of irrigation. They are merely followers of those ancient polygamists, in Babylon and other places in the East, who were celebrated for their hanging gardens; and our historians have shown us, that the system of irrigation, practised among the ancient Peruvians, whom we now know to have been as fully civilized as any people existing on the earth, was more complete, and attended with more difficulties,—the ruins yet attest the wonderful skill with which their designs in this matter of irrigation were carried out,—than the system which has been put in operation by those people, in the western part of our country.

In the Old World, the raising of vegetables has attained a greater height of perfection than in this country, and they are used there to a far greater extent as food than among us. There is no country in the world where meat is as cheap and plenty as with us, and where it is partaken of so freely; and I am compelled to say, that there is no country where that article of food could be so well dispensed with. The French people live mainly upon vegetables, as those who have lived among them know, and they have learned, not only to cultivate them thoroughly, but to cook them well, and to serve them up in such condition that they are palatable, and that they sustain nature; and you will find the people who partake of that kind of food as cheerful and able to do as much work as those who eat meat. It is a great folly to suppose that people cannot exist upon a vegetable diet, to a large extent. It is a great fallacy to suppose that we can do more work, exhibit a more cheerful disposition, or discharge our duties as citizens or as men better,

with a full meat diet than upon a mixed diet, the major part of which is composed of vegetables. We know that the people of the countries of the East are muscular, and perhaps exceed in strength, in agility, and in their powers of endurance, the people of the western countries; and yet those people live on a spare diet of cereals and vegetables.

Now, in this country it has always been one of the evils of our farming system, but slightly modified at the present time, that the diet of the farmer and his family has been mainly of meat, instead of being diversified with the fruits and vegetables of the garden. You may go now, even in this nineteenth century, and as late as the year 1871, among the farmers of this country, and you will find that most of them have three meals a day, which, in many places, are composed in great part of pork, in one form or another. Now, my private opinion is, that the devil entered into the swine about two thousand years ago, and has not entirely come out of them yet; that the effect of his presence is always felt, and once in a while it comes out very strong, in the shape of some mortal disease. There are occasions when men are driven to a diet they do not like. Dr. Kane tells us that when he was in the Arctic regions, with his sailors dying around him with the scurvy, he found nothing more palatable than a frozen rat; but we should not fancy that as an article of daily diet. I am not prepared to say that we should not eat meat at proper times, but I say that there is no occasion for having it before us habitually, especially pork. I have no doubt that any farmer will say that he can raise a two-year old steer just about as cheaply as he can raise a hog, and if he gets one of those into a barrel, he will have a better quality of meat; or, at any rate, he will diversify the food of his family; and if he adds the vegetables which ought to be grown in his garden, his family will improve in health and in morals.

This matter of vegetables for the garden and farm may be treated in various ways: as the æsthetics of the farm, so to speak, and as a profitable crop for the farmer to raise. We have improved a good deal in this matter of raising vegetables of late years, but too many of those farmers who raise vegetables are in the habit of sending most of them to market, reserving but a very small quantity for their own use. Look at the gar-

dens of our farmers, and what do you see? Take asparagus, for instance,—one of the most healthy esculents we have. If you see it at all, you will see it in a little bed about as big as a common door-mat, when it requires a space twelve feet wide by fifty or a hundred deep, in order to obtain a sufficient supply for a family. So it is with many of the most delicate vegetables, which farmers ought to have, but which, if they raise at all, they send the crop to market, and live themselves entirely upon potatoes and cabbage.

Now, in regard to raising vegetables for the market, we all know that it requires a peculiar soil to raise early vegetables, and that, as a general thing, it requires a different kind of labor from that which is ordinarily used on our farms. You can get a Yankee farmer to do almost anything, if you will allow him to do it with a horse or a pair of oxen, but when you invite him to come down and put his muscles behind a shovel or a spade, he is very apt to shrink from it. There are very few men who like to spade up a garden or to trench it, when they can take a pair of oxen or horses and plough it up; and that is one great reason why our farmers' gardens are not as they should be. In the first place, as Col. Waring emphatically told you, your garden must be thoroughly drained. You cannot raise good vegetables upon wet land, and especially deep-rooted vegetables. Your land must be thoroughly drained and ploughed deep, so that they can reach down as low as they want to go; and if the theory of the geologists and natural scientists is true, that the lower you go down the warmer the earth is, as the lower regions are only a few thousand miles below us, of course, the longer your roots are, the nearer they approach the everlasting fires, and the warmer they get. I suppose the theory of our friend, Mr. Greeley, about deep ploughing, is based upon that. However that may be, our gardens, as I said, must be thoroughly drained, and of course that must be by tiles. You cannot underdrain a garden by stone. You want your tile low enough, so that you can plough deep and get the soil in proper condition. The next question is, what kind of manure you shall use. If you are planting corn, you can use coarse manure, because a gross feeder like that will take up anything; but for delicate vegetables, those which you want to drive forward, so as to make them mature early,

that they may be fit for the table, or at any rate to get them out of the reach of the frost, you want to use manure so composted, and so comminuted, that the very moment the roots reach it, they can begin to feed upon it. As a general thing, the manure of our farmers is so coarse, so wet and so imperfectly composted, that it is worth but very little for this purpose. But I find that those farmers who are farming for milk or the production of beef, begin the first thing to make their compost heap. And every farmer can begin it with the materials at hand. He may make it from the leaves in the woods, from the muck-bed, from refuse manure, from anything that he can get hold of that can be put into a heap, which, by the aid of moisture, will decay. Any one who is in the habit of travelling about, will find that these theories are reduced thoroughly to practice by those people who come to this country from the old, where they have been in the habit of cultivating small portions of land at a great profit.

There is no country where cultivation has been so thorough as in Belgium. This has been due to several reasons, one of which is, the small portion of land which each farmer occupies, and their habits of systematic cultivation. You find the people from that country and other countries of Europe, on the line of railroad as you go to the city of New York, occupying what would be considered very sterile and waste land, but on which they raise the best vegetables brought into the New York market. In former years, Long Island was the great garden of New York; most of the vegetables supplied to the city were brought from that place. They were able to do it by the use of what came from the stables of New York, which was taken to the island in sloops, and there used in such a way, that the farmers of that place for many years carried on, and still carry on, a large and profitable business. I apprehend that their profits, if compared with those of any other class of men, almost, who are not doing business in the cities, would be found to be much larger. So it is now around Boston. You will find in all the suburbs of the city, that the men who are making the most money in farming or gardening, are those who are raising vegetables for the markets of that great emporium. Of course, we farmers away back in the country cannot expect to compete in that kind of business, but we may still find a

good profit in it. There is hardly a place in Massachusetts that has not a manufacturing town near enough to it to take a large portion of its vegetables; and there is one article, especially, which has a large sale for eating purposes, and that is the Swedish turnip. Our friend, Dr. Loring, has occasionally told us how good they are for horses; the people in our region have come to the conclusion that they are very good for men and women. We are selling them at fifty cents a bushel, and it does not take a great many to fill a bushel basket. Many of our farmers are cultivating them carefully, in the best possible manner, and producing very fine, nice and sound ones. They are nearly as hard as a brick, and I suppose will keep about as long.

Dr. LORING. They will keep longer.

Mr. GOODMAN. There is only one other point on which I wish to say a few words, and that is in regard to hedging gardens. Prof. Chadbourne knows as well as I do, that what chills us men and women, as well as our vegetables, is the west wind. We do not dread the east wind, as our Boston friends do,—we rather like it, because it gets a little tempered before it reaches the Berkshire hills; but the west wind comes from the prairies, it does not cross any water, and it is just about as fresh as our navigators find it at the North Pole, and unless we hedge our gardens, there are a great many things we cannot raise. I can raise the egg plant, for instance, to that point where it will blossom and the fruit begin to appear, but unless my garden is hedged, it will never come to perfection. I have a very simple way of doing that. I plant two or three rows of corn on the west side of my garden, quite thick, and let it grow, and then my egg plants, having the shelter of the corn, will grow to perfection. That is merely an illustration of the benefit of hedging. People who can afford to put a permanent hedge around their gardens, will find their fruit and vegetables much better and earlier, and they will have a great deal more comfort in working them.

Dr. LORING. The subject that you have opened is one of extreme importance, I grant, to man and beast; but it is one that I have discussed so often, that I crave the indulgence of the Board, while I go back a few steps and commence upon the preliminary chapter.

I trust you are not all wearied with the discussion of this morning upon the fertilization of the soil, because I want to present, as the commencement of vegetable growing, a few of my own ideas in regard to the preparation of the soil by means of fertilizers. I think you must all have been struck, not only with the difficulties that lie in the way of the scientific gentleman who addressed us with regard to the value of the application of commercial fertilizers, but with the different views entertained by practical farmers, who use every variety of fertilizer that they can lay their hands on. There was considerable disagreement, and nobody seemed exactly satisfied, or to have come to any definite conclusion. Dr. Nichols gave us an interesting account of the way in which he had brought up his farm in nine years, from comparative worthlessness to a condition of fertility that was admirable; but he did not go so far as to tell us exactly how he did it. And when he condemned the usual fertilizers found in the market, he did not state distinctly the means by which he himself has brought his farm up, nor the kind of fertilizer he used precisely. Notwithstanding the value of his lecture, we were left a little in the dark about that, and I felt when he got through that there was really no superphosphate that was useful for the purposes of cultivation. When we came down to the discussion among the practical farmers who were present, we were in the same difficulty. Nobody could tell us precisely what was the best method of fertilizing an acre of corn. The question was asked me here this afternoon, what the best manure to put upon potatoes was. So we were all left a little in the dark, a good deal afloat; I was, at any rate. And when Dr. Nichols said that we must accept fixed laws, those things that had been established, I had a mind to get up and say, "I will thank any gentlemen to show me what is fixed," for I am so hungry that I am ready to accept almost anything.

It seems to me, gentlemen, that the difficulty is this. This matter of fertilizers is one of the most intricate and complex with which we have to deal. Precisely what the soil wants nobody can tell, any more than we can tell precisely what an animal wants, in order that he may be developed to the highest point of perfection. We know he needs nourishing food, but what that is, we do not know exactly. I am satisfied that fer-

tilizers work in two ways: first, by directly feeding the plant, and, secondly, by putting the soil into such a condition that it can present to the plant, *from itself*, the food which it wants; in the latter case, working partly chemically and partly mechanically. I have no doubt about that. In the first class, I would put all those active manures that manifestly provide the soil with plant-food, as it is called, and at the head of this list I would put barnyard manure. You may go where you will, you may go to South Carolina, you may go to Germany, you may go to the Guano Islands, or you may go into any chemical laboratory in this country, the best thing, the last thing, and the fundamental thing, after all, is barnyard manure, and enough of it, to make a farm shine.

Now, it is a curious fact, that this barnyard manure answers both the purposes of which I have spoken. In the first place, it supplies the plant with food,—what we call the *pabulum*: what it is, I do not know. It is that which goes to make up bulk; that which, in a good slice of roast beef, goes to make a man feel full; and it is not nutritive, either. It is that which carries with it the fertilizing property, and makes a shovelful of fertilizing material a good deal better for the plant than a thimble-full. Now, I think that barnyard manure contains that in the best possible form in which you can put it, and that of itself, acting mechanically and somewhat chemically upon the soil, enables the plant to secure its food readily. Then it has another property. Dr. Nichols talked about nitrogenous manures this morning. They are the most stimulating manures we get, and while they act immediately upon the plant itself, they also act upon the soil in such a way as to compel a barren and impoverished soil to wake up and go about its business: so that those manures that are especially nitrogenous exhaust the soil. Exhaust it, why? Simply and solely because they compel the soil to work beyond its natural strength, so that the soil is exhausted after it has got through with that business. Hence there is a tradition somewhere, I forget where, that the farmers put fish manure upon their land until the land was worn out. It was the nitrogen that literally forced the soil into such a condition that when it got through, it was tired to death: it was like a man with an extra glass of rum. Give him the glass of rum and he will work like lightning; but when it is all

over, where is the man? That is the condition of any soil that is fertilized with nitrogenous manures. Barnyard manure contains that element, and that sets the land to work. Then barnyard manure has all those soluble salts, phosphates, nitrates, &c., which give food directly to the plant, and so it is at work all the time, doing in one mass what chemists and ingenious farmers are endeavoring to do by furnishing a substitute for each one of these active processes. It seems to me that that is the best illustration of the diverse ways in which manures act upon plants that I can possibly give you.

Then there is another fact with regard to fertilization which I think farmers should not overlook. I have said that your soils get exhausted; so they do, but I am perfectly sure, gentlemen, that the introduction of one soil to another may be made useful. For instance, if you have a bed of sand, you know perfectly well that you can increase the fertility of it by putting muck into that sand, if the muck is of good quality, and you know that you can improve the fertility of that soil by the introduction of clay. Every man knows that he can improve the fertility of his land by the mixture of one quality of soil with another, and it may be that the different qualities of soil are contained on the same farm, so that you can produce a good result from perfectly inert sand, when you mix with it soil of another character. Now, if we have on our own farms, lying side by side, diverse soils, which, if introduced to each other, will increase the fertility of our lands, that will help us a great deal. Everybody in Essex County knows that if he spreads two or three cartloads of sand upon his grass land it will make herdsgrass grow there as if he had sown barnyard manure upon the soil. That is one of the things that every practical farmer can test for himself, and I have no doubt that that will do a great deal towards the restoration of the old farms which we consider worn out. Every man who has a sand-hill and a clay-bed can try it, and you may depend upon it, that if the same industry and skill and one-quarter part of the money that are now spent in experimenting with manures, could be spent in the marrying of one kind of land to another—“and what God has joined let no man put asunder”—we should see results that would astonish us.

That seems to me the foundation of the whole business, and

that is a thing to which we can apply the law so well laid down by Prof. Chadbourne,—and somehow or other he seems to dig up about all the facts and laws that we can find: he hits the nail on the head every time, and that is a good thing to do. Now, bearing in mind the facts which I have stated, how admirably we may apply the law as laid down by him, that every man should study the process of fertilization on his own farm, and learn there what is best to be done! I have nothing to say of commercial fertilizers or superphosphates, because I have long since got weary of using them. I am told that there is fifteen per cent. of water in one, twenty-five per cent. in another, thirty per cent. in another, and so on. Well, I learned long since to respect water, for it seems to me to lie at the foundation of the whole animal, vegetable and mineral economy. You take these dry bones that have been so long idle, doing nothing, and how large a proportion of water do you suppose they contain, when you undertake to apply the test to them? Eighty-five per cent. of water in every man's brains—the best of them—a little more in some. Every particle of roast beef we eat—how large a percentage of water do you suppose we consume? So I have long since abandoned the attempt to find out the value of these fertilizers upon the water theory, and I use them just exactly as I use any substitute for the best thing I can find, and always try to get that which is the most reliable in the market. I know perfectly well, for instance, that ground bones,—I do not mean bones ground to powder; I do not think they are good for much, I may be mistaken, I am ready to learn on that point,—but bones crushed coarsely, and properly treated with ashes, as Dr. Durfee described this morning, make a useful manure. I have an impression that if the bones are ground to an almost impalpable powder, they do not act upon the soil to so good an advantage as bones that are more coarsely ground. I am not sure that the rains do not wash the powder away. It will not stay until the soil can get hold of it. Gentlemen are apt to forget that great chemical laboratory which Nature has established in the soil itself. I think that this impalpable powder gets out of the way before the soil can get hold of it, and therefore I think that ground bone is a better and more reliable thing, and, combined with ashes, I have no doubt it makes a very useful fertilizer. I think Peruvian guano

applied directly to the soil is a stimulant and a good thing to use. When all these things have gone through the chemist's laboratory, and have got into chemical combinations, I do not believe that even Dr. Nichols will undertake to vouch for them. These are the views I have in regard to fertilization.

With regard to the application of manures, I am perfectly sure that manure, when applied to the soil, should not only be properly composted,—which means combined with other and bulkier articles,—but that it should be properly decomposed. It has got to rot before the plant can touch it. Remember that. It is no use to talk about a plant growing upon the influence of green manure, for when the plant begins to grow upon the influence of that manure it is no longer green; it is thoroughly decomposed, so that the salts of that manure are fit to be taken up by the plant. While a cartload of barnyard manure is reduced in weight by the process of decomposition, it will be increased in the elements of fertility by the development of soluble salts in the process of decomposition. This has been proved over and over again by the best English chemists. It is therefore properly composting barnyard manures, or any other manures, with those articles in which your soil is deficient, which gives value to your manure; using sand as a compost for clay lands, and muck as a compost for sandy lands, and then letting the whole mass decompose before you expect the plants to take it up; for if you put it into the soil green, you have got to wait until the processes of fermentation and decomposition take place before the plant can derive any nutriment from it. I am sure if you will study the history of the best and largest crops that have been raised, you will find that they have been due to careful and accurate manipulation of the soil itself which produced the crop, and the application of carefully prepared and properly decomposed manure to the crop itself. That I think is the law.

Now I have one word to say as I go on—because I want to take these things in order—in explanation. We have heard a great deal said about fodder corn, and some people have been kind enough to look at me and say, “What a pity it is that you have committed yourself upon the wrong side of the fodder corn question.” I have had more sympathy—I have had a great deal of abuse and a great deal of ridicule heaped upon

me, but I have had more sympathy expressed for me, in connection with this matter, than I ever had for any misfortune in my life, whether that misfortune was being stripped by a State Convention or anything else. I have never had gentlemen approach me in such a sympathetic way, as much as to say, "What a dreadful thing it is to have got into this position." Now, my friends, I have not got into the position that these gentlemen seem to suppose. I agree, I always have agreed precisely with what Dr. Nichols said this morning. When I stated to the farmers of Massachusetts that fodder corn was not a proper food to give to milch cows, I was dealing with what every farmer was feeding to his cows under the name of fodder corn. Now, friends, I used to raise fodder corn myself. Before I got too lazy to do it, I used to take a plough in the morning, furrow out my ground, take a small horse-cart and some manure, drop it into those furrows, and then I did just as the old, substantial, experienced farmers told me to do; I filled that drill full of corn. They told me that was raising fodder corn. Isn't that the way it is generally done? It used to be generally done so, and I believe it is generally done so to this day. That is the way fodder corn was and is raised. Now, what was my crop? It was just exactly the crop that every man gets who seeds for fodder corn in that way; and that was, along from the middle to the last of August a growth of vegetable matter from four to six feet high, without a shadow of a shade of maturity to it, as green as rowen, and that is green enough: as green as rowen, and as immature as a ten-year old boy: utterly without any indication of having arrived at a condition in which it would be nutritious to cattle. There it stood, with great leaves, great stalks, looking like I don't know what rampant growth. What did I do with it? Why, from the middle to the last of August, the hay-cart was sent out and it was cut down with a sickle or a scythe, piled into this cart, and brought up to the barn, put before the cows, and they ate it. I am telling you just exactly the way in which this fodder corn was raised and used when I came out and said it did not do any good. The cows got at it, and thrashed it this way and that until they got thoroughly worn out. They would eat a good deal the first day, not so much the second day, and by the fifth or sixth day, they manifested that they had had about enough

of that. What was the consequence? The experienced farmers in Essex County found that there was no increase of milk, but a diminution. Mind you, I am not talking about *corn fodder*, I am talking about *fodder corn*. The milk was diminished, but of everything else other than milk and beef, there was an abundance. I said there must be some remedy for this. One of the most sensible farmers in my district came to me and said, "I have known just exactly this state of things for years; it is a perfect nuisance, just as you have found out for yourself; I thought you were green and had not found it out and I would not say anything about it." I thought I would turn round and see if I could not find a remedy. I tried millet, and I found that at the time when this fodder corn had reached the condition which I have described, my millet had come to a condition of maturity; it stood almost up to my armpits, a solid mass of vegetable matter with seed heads to it, and when I cut that down, I found that the effect of that article, which had arrived at that degree of perfection, was very different from the effect of the fodder corn. I found I could make milk with that just as well as I could with June grass; there was no doubt about it at all. I had got a plant there which, occupying the entire soil as it does, without any spaces between the rows, I am satisfied will yield as much food to the acre as fodder corn which is planted in rows. You see it occupies every square inch of the land, while the spaces between the rows of fodder corn are utterly useless. It seemed to me that I had got at something there that was useful. I fed my cows, and I got from two or three acres of land, food that would last my herd of fifty animals as long as my corn fodder would. I found no difficulty about it.

Then there came up this statement that I was all wrong. And what did those gentlemen who thought I was wrong, say? Why, they said, "Corn fodder is good food." So it is; but what is that commodity which we call "corn fodder"? In the first place, it is the stalks of corn; in the next place, it is the butts, usually so called. It is something that is matured, it is something that is left after the ears are taken from the stalks. That is corn fodder. That is what has been known from the earliest period down to the present day as corn fodder, and that is not what is usually called fodder corn in agriculture. If

anybody undertakes to say that corn fodder is not good for anything, he is mistaken. I agree that it is a most valuable article of food; that you can make as much milk from that, properly prepared, as you can from anything else—more than you can from poor hay. I am sure that our farmers suffer as much from the waste of their corn fodder as anything else. When I have been out in the country and seen those long stalks, as big round as your wrist, lying in barnyards, trodden under foot of cattle, and wasted there, I have looked upon it as one of the most wasteful things of which a New England farmer can be guilty, where winter food is as dear and scarce as it is with us. So I use all my corn fodder; cut it up and apply hot water to it, until it is in such a condition that my cattle will eat the whole of it,—the large butts, the leaves, and everything else. I think that corn fodder, combined with shorts and a little Indian meal, is about as good an article of food as you can give to a milch cow in winter time. That is what the advocates of fodder corn are talking about to-day, every one of them. Why, even the Commissioner of Agriculture, who has seen fit to come out with his manifesto in defence of something that he knows nothing about, saying that those farmers who undertake to reflect on corn fodder are ignorant, and do not know how to plant it, makes the statement that this food that I have just described is useful, and I agree with him that it is. If you propose to take an acre of land and plant this corn so sparsely that when it grows up, it will keep maturing, and along in the latter part of the season will have an ear upon it, and then cut it up and throw it to your cows, you cannot do a better thing. I agree to that; but it is then in the condition in which my millet is when I begin to feed it; it has reached the same point of maturity.

I dwell upon this, because, although it seems a trifling matter, it is a very important point for farmers to understand who wish to conform themselves to the best law of vegetable economy in feeding their animals; and it is not a trifling question, in that point of view, at all. I agree that the plant which I have described, brought to that degree of maturity which I have described, is a most valuable and useful thing. I have used it this summer myself. I raised six acres of sweet corn this summer; it brings us from \$150 to \$200 an acre, in the market

close by where my farm is. Of course there were some nubby and imperfect ears left, not suitable for the market, and I looked upon that six acres as something that I could feed in the winter time. I said to myself, "This will extend my hay crop; I have got something here to feed to my cows;" but my pastures got short, my mowing fields were not in a good condition to feed, and I had to go at this standing corn. I had to cut this sweet corn, standing there, and it did just what I supposed it would; it increased the flow of milk from my cows, and was a useful food to give them. Why? Because it had arrived at a degree of maturity in which the plant could nourish the animal and increase the flow of milk, and that I go for; with this exception, that I cannot afford to raise anything on my farm to consume in the summer time which I can pack away in the barn to feed my cows on in the winter. That is a fact. I am so sensitive on that point, that I will not allow my farmer, or any other person in my barn, to feed a lock of English hay to anything except to the horses that have been driven on the road. If a yoke of oxen cannot do my work and get their feed in the pastures, I do not want to have them around, and I am sure I do not want to feed any animal with that kind of provender which I can store in my barn to use for winter food.

Now, I think I have explained myself fully. *Corn fodder* I believe in; I will go with the rankest corn fodder man clear through to the bitter end. I have committed myself to that point, haven't I? But *fodder corn* I despise and repudiate, as usually known in the catalogue of green food for cattle. I might, perhaps, if I could take my pen and write it all down, explain myself still further, but I cannot do it now. I put it exactly on the same principle that I put the hay question; that is, it is a question of economy to the farmer and a question of nutrition to the animal at the same time.

Now, in regard to vegetables, just one word. I agree with all that Mr. Goodman has said. I agree with what he has said in respect to the profits of raising vegetables. It requires nice farming, careful agriculture, the proper application of manures, the proper mixing of soils, the most economical use of fertilizers, the utmost care and watchfulness, to raise any kind of vegetables for the market. It takes just as much vigor, activity and skill to run what we usually call a market garden, as it does to run

one of the cotton mills in Fall River, and I do not know but more, because, when Edmund Burke said it required more judgment to make a man a good farmer than it did to make him good in any other calling in life, he spoke the exact truth, and no man can deny it.

Now, what Mr. Goodman said about the use of a vegetable diet, I do not want to be forgotten. It is so important a question, that the Board of Health of the State of Massachusetts are appealing to me continually to write an article for them to put into their next report with regard to the value of vegetables. I look upon them as almost indispensable here. I look upon the use of salt meat as lying at the foundation of a great deal of the disease from which we are suffering in the eastern section of the United States, and in some other sections. I am sure there is nothing in the world so tough as a well-fed man. You cannot hurt him any more than you can a fox. You may take him to the North Pole, and he will live year in and year out on walrus or blubber, or anything else; you may start him on the dead run, and if he brings up at the equator, he is just as much at home in his linen blouse as he was in his furs. All he wants is a good stomach. A healthy digestion will carry him through all the perils of life, social, civil, or whatever they may be. It is a most remarkable fact in the history of nations, that those peoples who are fed upon a proper admixture of animal food and vegetable food are the most robust. The climate of Holland is not desirable: it is low, humid, damp, cold and disagreeable to a very considerable extent; it is no better than the climate of Massachusetts; and yet the Hollanders, living as they do largely on a vegetable diet, are hardy, tough, fat and round, and have a good time generally. They look as if they meant to enjoy themselves, and I have no doubt they do, and you can attribute to their vegetable diet a large portion of their physical condition. I hope that will be remembered. Now, I desire to say, that so far as the health of this community is concerned, if the farmers of the country are too busy to take up the raising of vegetables themselves, I hope they will put in a petition to the next Woman's Rights Convention, held in New England, and ask the women if they won't be kind enough to turn their attention to the cultivation of vegetables, and if they will only take up that as their part of the business of life, I don't care

what they do next. They may vote,—if they will vote for the right man,—or they may do anything they please. I say it in all soberness. It is a most admirable work for them to enter upon.

In regard to the profit of raising vegetables, there is no question. Where do the vegetables come from that are consumed here in Fall River? Where do the vegetables come from that are consumed in the good towns of Essex County? Do they come from the adjoining land? No. Strange as it may seem, we are living in our towns and cities upon the refuse vegetables of the Boston market. I have known barrel after barrel of green pease to start from the town of Weymouth, go into Boston, be sold there, and then be consumed in the town of Taunton. Those pease made two journeys over the same road. That is a most extraordinary fact. They went to Boston first, and they went to Taunton to find a consumer. That ought not to be so. The profits that have fallen into the hands of those men who supply the Boston market with provisions are enormous. They are almost as rich as the Fall River mill-owners, and that is about as much as can be said in this Commonwealth.

Now, what applies to the region about Boston, applies to the region about Worcester, Lawrence, Lowell, Springfield and every other large city or town of this Commonwealth. There is not a single acre of land within four miles of those towns to which I have alluded, that could not be made, by a proper application of skill and industry, profitable to the owner for the purpose of vegetable growing.

Dr. Durfee says I have used up my time; I am afraid I have used up your patience as well, and I must leave for the train.

• The CHAIRMAN. I disagree with the doctor totally upon the corn-fodder question. He states distinctly what he means by corn fodder: that is, what the farmers in our region, and through the whole of Western Massachusetts call “corn fodder,” he calls “fodder corn,” and there is not a farmer from Western Massachusetts here to-day who will not say that he has fed out his fodder corn this year with great profit, and that if he had not had this fodder corn, he could not have carried his cows through. I appeal to my friend here from Barre (Mr. Ellsworth) and to any gentlemen from that region, who keeps a dairy, to say if he has not used fodder corn this season to great

advantage. The question is not whether fodder corn is the best food. You have got to draw the same distinction in this case, that should be drawn in regard to barnyard manure. We all agree that that is the best manure in the world; but suppose you have not got it, then you must come down to the next best. So it is with corn fodder. If you have plenty of pasturage, you do not want this fodder corn, because it is poor stuff; it is hard to grow and difficult to keep, and when it is made, it is not half so good as grass, when put into the barn for winter; but the great question now is,—take a region like Western Massachusetts, where our pastures grow dry almost every season, where they are apt to fail by the first of September, and where, the last two seasons, they failed about the first of August,—what are we to do? Why, do what I have done for some years, raise what is called fodder corn, and raise it in the best possible way. Dr. Nichols has told us, and the Commissioner of Agriculture at Washington has told us this year, after gathering the facts from farmers all over the country, that the best way to cultivate this fodder corn is to plant it in drills, so that it will be exposed to the air and the sun, and get more mature, and do a great deal better than when it is sown broadcast. I have sown it for two years so thick that no weeds could come up. My pastures were entirely dried up, this year, and for at least six weeks fodder corn was all my cows had to support them, and I did not see that the profits from the milk were reduced from what they had been when the cows were in the pasture.

Mr. BUFFINTON. Did it spindle before you fed it out?

The CHAIRMAN. Yes, sir. I got the Western corn. It was sown broadcast, as thick as it could be, and it grew at least four feet high. That is the stuff which is designated as "fodder corn," which we call "corn fodder"; because what the farmers in my section call corn fodder is corn stalks after the corn has been taken from them.

Now, there must be some virtue in this corn. It is perfectly idle for any man to say that you can sow a kernel of corn, and that the blade which comes up from that is worthless. You might just as well say that you may sow a grass seed and the blade of timothy that springs from it is not good for anything. I have sown Hungarian grass, but it requires more care, and I

cannot get my men to go into it as I want them to. But I apprehend that there is some virtue in this fodder corn, if we cannot get anything better. I think I first started the using of this corn in the southern part of Berkshire County. Until within the last few years, there were but five entries of this corn in our society; the past year, there were sixty entries. Those gentlemen here who know the Berkshire farmers know that they are men of intelligence and experience; that they are as good farmers as can be found in a mountainous country. They are men who know what they are about; they farm for a profit; and do you suppose there are sixty farmers there who devote from one to two acres every year to raising this fodder corn, knowing it to be entirely worthless? The doctor may be right; I am very glad he has given us this explanation; but he stands firmly to-day upon the ground that this kind of corn is worthless. It may be so down in his region; there may be some peculiarity in the atmosphere, or in the animals by which the assimilation of this food is of no benefit to them; but in the western part of this State, that is the only substitute we have for our pastures. It seems to me that we should just as soon cry down the raising of grass in our pastures as to cry down the raising of this fodder corn, until we find something to take its place.

Mr. WARD, of Shrewsbury. I think there is no great difference between Mr. Goodman and Dr. Loring. If I understand the doctor, he does not condemn the use of fodder corn. He acknowledges that it made everything but milk. When he went to his millet, and let that mature, then he made milk. Now, I believe Mr. Goodman in his remarks acknowledged the same fact,—that there was life-sustaining matter in the fodder corn, but he did not say that he increased his milk.

Mr. GOODMAN. No, sir; but I say I made the same amount of butter.

Mr. WARD. Milk is Dr. Loring's object; and it is the object of most farmers. It is the desire of most farmers to use that kind of fodder that will make the most milk, and I do not conceive that there is that extreme difference between the statements of the two gentlemen that some might perhaps infer. I believe they will come to the same point in the end.

Mr. HYDE. I am sorry that any gentleman has found it necessary to take up three-quarters of an hour in explaining his position upon the question of the use of fodder corn. I think we have heard enough about this matter of fodder corn, especially when we have another subject assigned in the programme, in which we all have an interest. I do not object to the entertainment which the doctor has furnished; some parts of it were very amusing, and amusement is sometimes necessary and useful, but I am of opinion that we ought to discuss this question of market gardening. It seems to me that no more important question could be discussed at a meeting like this. It certainly ought to be a subject of interest to this city, if it is not to any other part of the State, but I think it is interesting to all our cities, and the neighborhoods about cities. I do not blame you Mr. Chairman,—you could not very well help yourself that the discussion took this direction,—but I regret that it has.

I do not wish to take up much of your time on this question; I was in hopes to hear from my friend, Mr. Moore, and others who are practical men, and who are raising vegetables for the market; but while up I will say a very few words.

You are aware, as every one is, that within the last few years the standard of market gardening has advanced about our cities, especially about Boston, and I believe from my observation in the principal large cities in the northern part of the United States, that there is no market so well supplied with good vegetables as the Boston market, and I believe I might go further and say that in certain things it is unsurpassed on this continent; among these are cauliflower, lettuce and celery, and I might add, strawberries, but these come more properly under the head of Fruit Culture. I say the standard has been greatly elevated. How? Through the instrumentality of horticultural and agricultural exhibitions. I can remember that only a few years ago a great many vegetables were brought to our Massachusetts Horticultural Exhibition, that we were ashamed to have exhibited; still it was hard to refuse contributors who had taken the trouble to bring them in, perhaps some distance; but finally the committee said "No, we must raise the standard; our room is limited, and we must have none but the best." The result is, that we now have exhibitions such as I have

never seen anywhere else except at Concord, and possibly at Dedham. They have done the same thing there, they have excluded the coarse vegetables, except it may be mangolds, where bulk is sought rather than fine shape and quality; these exhibitions, and others that I might mention, have been made better, the public have been educated up to a higher standard, and they have come to know what a first-rate vegetable is; and that is just the object which, as it seems to me, should be sought by these exhibitions; and what we want to talk about to-day is the best method of raising superior vegetables.

Now I endorse all that has been said in regard to a vegetable diet. I do not want to give up my roast beef; I like those things just as well as the others; but I do like vegetables. You may laugh when I talk about the flavor of vegetables, as I do about the flavor of fruit, but you know we fruit-growers cultivate this matter of taste, and some of us think we are quite acute in the matter. I sometimes taste twelve or fifteen varieties of grapes, and taste apples and pears in the same way. There is just as much difference in the flavor of different kinds of apples or pears, as there is in their looks. Just so it is with vegetables—the cabbage or the turnip—and I don't know why we should not carry this same thing into vegetables, to see whether they are the best of the kind that can be raised. To illustrate what I mean: Here is a man who sets out his celery in early summer, and earths it up as he finds it convenient, without regard to the season whether it is wet or dry; and when he comes to dig his celery it is rusty, wormy, thin and poor. You go to Mr. Crosby, of Arlington, or some other good grower of celery, who does not treat his celery in that way; and which would you take? You would not hesitate long to take that which was tender, crisp, delicious and free from all those imperfections of which I have spoken. What makes the difference? One man knows his business and the other does not. One gets a good article, and the other does not.

You may carry this all through. One man wants to raise cauliflower. He goes into a seed store and buys cheap seed; pays five cents a paper for it; he could not get a decent cauliflower if he bought a pound. Another man goes in and asks, "Have you cauliflower seed? I don't care about the price, if it is five cents a seed, if it is only good." What is the difference?

This man gets a magnificent white head of cauliflower, ten, twelve or fifteen inches across. I am not exaggerating this; I am telling you what I have done myself, and what others have done a great deal better than I have, for I do not claim to be a grower of vegetables; I only grow enough of such as will grow in this climate for my family. That is what I mean. I say that you can carry that principle all the way through. To illustrate further: there are men here who are very particular about their animals. If I should show them a good Jersey animal they would say "Where is his pedigree?" and if I said, "I cannot show you his pedigree, but I can assure you he is a very good animal," they would say, "We don't want that animal at any price;" but you buy your seed without regard to its quality; you put that seed into the ground in any way you can; you are not particular how the garden is ploughed up, and yet expect to get a good crop of turnips or cabbages or beets; that is not the way to do this work; if it is worth doing at all it is worth doing well.

Now certain gardeners about Boston have acquired a reputation for certain things. I can tell just as well who will have certain articles first-rate, as a butter dealer can tell who makes good butter up in Western Massachusetts or in New York, and who will make it good every year. I will tell you where you can always get a first-rate article of lettuce or cauliflower or celery every time, and they will never fail. Why? Partly, perhaps, because they had made a specialty of these things, but mainly because they knew their business. They know what a good thing is to begin with.

Now do not find any fault with me, for I do not mean any particular agricultural exhibition, but I have seen crowds of vegetables in various agricultural exhibitions that never ought to have been there. In the first place, it misleads the public. They think those vegetables good when they are not good, and they ought not to be admitted. The exhibitors ought to be told to raise better vegetables, and then they will be shown. It is a good deal as it was up at Amherst last fall. Some men came to Colonel Clarke and said, "We have entered for this horse race, but here is a man who has got a horse that will distance all our horses, and take all the money." "Well," said the colonel, "Let him do it if he can. I am glad of it if he can

distance all your horses; go and get better horses." Now I say exclude those vegetables, and tell the people who bring them that they must raise better. Do you say that cannot be done? I say it can be done; it only requires men who understand their business. It is hard to raise all these things to perfection. I grant that it is a hard and difficult thing to run a farm successfully. I said at table to-day, that it used to be believed that a farmer could take his smart boys and make ministers, lawyers and doctors of them, and make farmers of the boys that were left—make farmers of the fools. The fact is, you want the smartest boys to make farmers; if a man does not know his business he cannot succeed.

Dr. Nichols told us that the farmer could make this manure that he recommended. I do not see how. It is easy for him to make it, but could a man take hold of it and learn as he could. Now we can do this thing. My business takes me to almost every part of the State, and I have noticed, as I have gone around, how many farmers there are who feed themselves and their families with pork and various other articles of food that are not among the most healthful, and upon whose tables I have rarely found any other vegetables than a potato, and possibly a cabbage, when there are at least twenty varieties of vegetables, some of them most delicious, which can be raised just as well as a potato or a cabbage. The wonder to me is, that you scarcely find a garden, go right through Massachusetts, that has asparagus, that has cauliflower, that has celery, that has the egg-plant, and so I might go on and enumerate vegetable after vegetable that you rarely find in a farmer's garden. If they are a luxury, why shouldn't we have them for our own use, to say nothing about raising them for market. Just look at the matter of cauliflower. I grant they are a little capricious, but look at it; I sell my surplus for from twenty-five to fifty cents a head. They will yield about as well as cabbages; they will not all head as well as cabbages; but suppose half of them head, what a crop it is. There is no more delicious vegetable than the cauliflower. Do you ask if there is a demand for them? The public cannot get enough of them. These are all within our reach, even if we do not want to grow them for profit, but I take it farmers, like other men, want to make all the money they fairly and honestly can. Some of us

farm for pleasure, but most of us farm for profit. We are talking about gardening for profit. Now where can you make the most money? I do not believe you can make it in raising ruta-bagas; they are very heavy to carry to market, especially if you happen to be twenty miles from a market, but you can make thousands of dollars in raising asparagus, and you can send it just as well twenty, thirty or fifty miles, as you can send it four miles. It may be that the middle men get rather more than they ought, but that is one thing; it is not heavy to cart, and it always sells. I never knew the market glutted with asparagus. Mr. Moore raises the best that is raised in Massachusetts. I never knew the market fully supplied with cauliflower or asparagus. I never knew it glutted with celery, and so it is with lettuce. Do you know that Boston supplies the lettuce and celery for the markets of New York and Philadelphia, to considerable extent? It is true; in my own town of Newton, hundreds of dollars worth of lettuce are sent to New York every spring. It seems very strange that they cannot get lettuce there. It can be raised anywhere where they will attend to it. One hundred dollars worth of it will not weigh as much as five barrels of ruta-bagas that you would not get more than \$15 or \$20 for. Now you can raise lettuce out of doors and in doors. I speak of these things merely by way of illustration. This is a subject which I could talk about a great while, but it was not my intention to speak at any length. I wanted simply to throw out these hints to provoke some discussion. I want to hear from others who I know are well qualified to speak on this subject.

Mr. STONE. I am not going to make a speech: we have some gentlemen here, Mr. Moore and Mr. Slade, and others who know all about this subject that is now before us. If we can get our friend Moore at it, I think he will give us something that will please us; and if there are any gentlemen here who have attended the Concord show, and seen the display of vegetables in that hall raised in and about Concord, Arlington, &c., coming from those very market gardens that beat the world, my friend Moore would need no further introduction than to say that he is one of the men who does it. I hope he will tell us how it is done; and I hope we shall hear from our friend Slade, who lives in this immediate vicinity, and who

is a very successful cultivator of strawberries and vegetables, and who finds his market in Boston. I want him to tell us why he is obliged to send his vegetables to Boston.

There is another thing I want to bring to the notice of this meeting, and that is, an essay that is published in the Massachusetts Agricultural Report of the present year, on market gardening, by the very gentleman whom I am endeavoring to call up, Mr. Moore. A more valuable essay, according to my idea, was never written and printed in this or any other State, if gentlemen will only examine it and learn from it.

Dr. DUFFEE. If I were from Middlesex, I think I should stand up here pretty bold on this subject. I have been dwelling considerably of late upon statistical information, and when I came to look over the statistics of Massachusetts, and saw what Middlesex does in this matter of raising vegetables, and the annual income received from that source, it astonished me; and, as I said before, if I was from that county, I think I should be ready to say something in regard to the position of Middlesex on this subject. I notice in the statistics of the Industry of Massachusetts, that Middlesex County received more income from the growing of vegetables than the whole State of Massachusetts besides, and any man who comes from a county that has as good ground to stand on as that, certainly ought to be heard on this floor.

Mr. MOORE, of Concord. I do not propose to say anything on the corn-fodder question, but I could not help thinking, at the time when that matter was under discussion, that a gentleman who is as smart as Dr. Loring must have been in a pretty tight place, if it took him an hour to get out of it. I leave it there. I think that is answer enough to all he has said.

I do not know that I need to speak of the importance of raising vegetables for consumption by the human race, or for consumption by cattle; certainly not, as far as the human race is concerned; but I do not think that our farmers understand the necessity of growing roots for their cattle. If they do understand it, they do not do it. There is no doubt that the feeding of roots makes cattle more healthy, and they are probably cheap food. In raising vegetables for the market, there is a necessity that the soil should be adapted for growing

vegetables. If you propose to raise a handsome crop of carrots, parsnips, or any other long-rooted vegetable, it cannot be done on clay soil; it must be done on sandy loam, or soil of that nature; while cabbages and cauliflowers would grow better on clay soils. The first thing in growing vegetables is the preparation of the soil; that is a very important matter. In the first place, the soil must be deep; it must be well drained, and it must be so thoroughly harrowed and stirred as to reduce it to a fine tilth, otherwise you cannot raise smooth roots; it is impossible, with lumps in the ground, to raise smooth roots. Then it must also have high manuring. Farmers are not aware what market gardeners mean by high manuring. A friend of mine, who is a market gardener, who cultivates only ten acres of land, uses two hundred and fifty cords on that ten acres. Of course some of it goes into his hot-beds; but that would frighten an ordinary farmer. I do not know where to get so much manure as that; I get all I can, and make it go as far as I can.

To grow vegetables as they grow them in the vicinity of Boston, you must have an abundance of manure. Not chemical manure; I doubt if you could grow vegetables with any of the preparations that Dr. Nichols could give you. I should not dare to try it, with any of them. Although I have dissolved a great deal of bone in sulphuric acid, and formed what I called superphosphate, and found a good effect from it, yet I have only used that in addition to the other fertilizers.

After the preparation of the ground, and having the soil highly manured, then you come to the seed. Now, farmers do not understand that matter as market gardeners understand it. The difference between good seed and bad seed is the difference of all their profits. No one who uses poor seed can raise good vegetables. As friend Hyde says, good seed is of the first importance; without it, you cannot raise good vegetables. In the growing of vegetables as food for cattle, a little coarseness might be allowed, because, as friend Hyde says, bulk is of more importance than smoothness; but in raising vegetables for the market, it is necessary that the seed shall be of those varieties that will grow a smooth root. Much of the cauliflower seed that is sold is worse than worthless, for if you manage to get plants above ground, and have a poor crop, that

is worse than if they did not grow at all, for then you would try some other crop. Take turnip-beet seed, to illustrate. Suppose a farmer sows an acre of turnip-beets, the product of that acre should be six hundred bushels, to say the least. That would not be a large crop. Now, if he raises a good article, take one year with another, they will bring nearly \$1 a bushel in Boston market; but if they are a coarse article, that market has become so particular, that the dealers will not take a coarse article, and it is no use to send it there. If it is a coarse article, it is worth what? Anywhere from fifteen to twenty cents a bushel, as food for cattle. There is the difference between good seed and poor. You can all see it at once.

After the seed is sown—and, by the way, what Dr. Nichols said to-day is true, a large portion of the seed is planted too deep—the market gardeners use a small hand-roller a great deal in their business, because you can sow your seed at a less depth, and it is more sure to germinate if the soil is compacted by running a hand-roller over it after sowing, and it will come up much better. In sowing their seed, market gardeners are very careful—and the same would apply to a great many farm products—to have their rows perfectly straight and of uniform width. I contend that it is no more work to raise beans or anything else in straight rows than to have them crooked, and you do not annoy anybody, or make anybody twist his head off in looking across your field. Why is it better to have the rows straight? For the reason that you can run your horse-cultivator and your wheel-hoes much nearer to the row when it is straight than when it is crooked; therefore, you save in your cultivation. Then, if you wish to cultivate in the best way, you will cultivate early and often; the old democratic way of voting, when I was a boy. Keep all the weeds down; don't allow them to get a start. The old idea of letting the weeds get up and then killing them is exploded; market gardeners don't believe in it. We don't propose to have them get up at all. Thorough cultivation improves the crop, makes it larger, makes it less costly, not only because it is larger, but because it is less work. Therefore, clean and thorough cultivation is one of the most important things in raising garden vegetables; but no more important there than it is in growing crops upon the farm. No farmer can afford to raise a crop of

weeds. Most farmers do it, but they cannot afford it. I have raised about as good a crop of weeds, I presume, as any one in this room, and I think it was the most unprofitable crop I ever grew. There are a great many objections to raising weeds. One is, you exhaust the soil, to some extent. Another is, if you don't cut them off before they have gone to seed, you will fill the land full of seed, which it will take years to get rid of, if any of it is ploughed in very deep. Take Roman wormwood, for example, which will not germinate if it is two inches below the surface. You cannot reach it, therefore, all at once, and you will be troubled a great while for a little neglect in allowing the weeds to grow.

All farmers should endeavor to make some improvement in their vegetables. It is a very easy matter, I think, to improve your varieties by cross fertilization. Take any variety of field corn, and I have no doubt that inside of five years I could improve the productiveness and earliness of that variety from ten to twenty per cent. You see the point. If that is true, and it could be done throughout the State, you see what an addition it would be to the corn crop, simply from having good seed. Now, if you cross the seed of any varieties, and get what you want, the tendency of that seed will be to revert back to one of the original parents; perhaps the one you want least. I might illustrate that by taking corn. Suppose you have a very early variety of corn. Earliness is usually associated with fulness of size, and small corn is not usually so productive as large. You want to retain that earliness, and at the same time increase the size, and you cross that with a larger variety. Well, after you have got what you want, then will come your trouble, to some extent. You will want to save the seed, and the most natural thing for a farmer to do is to save the largest ears that grow on his field, and it is just those ears in which the tendency to run back to the original parent, which was late, is most strongly developed. If you plant the seed from the largest ears that are produced on your field for three or four years, you will very nearly run that corn back to the original late parent; whereas, if you select just the ear you want, at the time it is maturing, so as always to get size and earliness, you will perpetuate the desirable variety, to a considerable extent.

Now, in regard to specialties in farming,—specialties in raising different crops. Every farmer here can probably think of some person in his own town who is very successful in raising potatoes, as an illustration. The first thing a farmer would say is, "That man has a better soil on which to raise potatoes than his neighbors"; but you will find, if you look carefully, it is no such thing. Perhaps that man has gone into raising potatoes largely, and it becomes a matter of vital importance to him to know how to do it in the best way; therefore, the first thing he does is to look up that matter. It is his trade to raise potatoes, and he perfects himself in that business. Other farmers assume that it is all owing to his soil, but it is not so; he knows how to grow them; knows how to prepare the soil and the seed. I have experimented with potatoes, although I do not raise them much for market, for it pays me better to do something else, and I know I can raise a good crop of potatoes at any time if I will comply with certain conditions. That is, I know that if I take a piece of grass ground, and let it run until the middle of May, until the grass has got a good start (mind you, these would not be early potatoes), then put on a heavy dressing of coarse manure, and plough it in four or five inches,—four would be better than five,—I have got the conditions requisite for a good crop. What have I done? I have done just what has been recommended here. I have composted that manure completely. I have turned it over with the grass sod next to it, and piled four or five inches of earth on top of it. I have a soil under it, which saves any gases that might otherwise be lost; I have a soil above it; I have that sod lying there within five inches of the surface. What have I got? Why, gentlemen, you will see at once, that I have made a perfect seed-bed to grow those tubers in. Now, after turning that over, the sod not being ploughed under very deep, you see it would become necessary to roll that ground to prevent the harrow from pulling up the sod. I do not want the sod in my way. I roll it down, harrow it, or work it over with the cultivator or something of that kind. Then I furrow it, and I have used, in addition to the manure, superphosphate in the hill.

You may talk about the necessity of potash for potatoes. I am not going to dispute about that. But almost all soils in Massachusetts, even the most sterile, have more or less potash

locked up in them, and the effect of that nitrogenous manure which I have applied is to liberate that potash, to make more potash available to the plant.

Now, I know that as large potatoes as I ever saw grown have been grown by myself, three or four years in succession, in just that way, whereas, in some other ways, perhaps I should not have got so large a crop. Of course, I am not prepared to tell you how many bushels I raised to the acre, but as many as has been mentioned here to-day, to say the least.

The only other matter of which I shall speak, for I do not want to take up too much of your time, is the necessity of fighting insects at once. In market gardening, you must not give them any chance. If any insects appear, you must contrive some way to fight them. The insect that perhaps annoys me more than any other in the growing of cabbage is a little maggot that works under ground. Perhaps you will find twenty or thirty on the stem of a cabbage. That insect troubles the Arlington gardeners a great deal, but they protect themselves in some measure by high manuring. One of my friends said, "If the maggots don't eat up my cabbages in two days, I will drive them up so big that they can't hurt them." That is the whole secret of this matter, if there is any secret about it.

Mr. WARD. Do you find any objectionable quality in potatoes raised in the manner you have suggested?

Mr. MOORE. No, sir. I don't believe in a good deal of the talk that we hear about tasting the manure in all the stuff that is grown. If that was true, you would have a pretty strong taste of manure in the vegetables grown around Boston.

QUESTION. How deep do you put your seed?

Mr. MOORE. I cover them sufficiently to have them germinate—two or three inches.

Mr. JOHNSON. As no one else seems to be inclined to say a word, and as I belong to that good old county that Dr. Duffee has spoken about to-day, and always feel proud to claim that as my birthplace,—more so, I have no doubt, than the county feels to claim me,—I will say, that we claim to stand at the head of all the other counties of the State in regard to vegetable gardening, and almost all other products. We have heard from Capt. Moore, who has the *science* of growing vegetables of all kinds, as well as fruits, that the secret of growing them successfully is

in the preparation of the soil. The same thing is true with respect to the growing of farm products. Then the next thing is the manure; and I am very much obliged to my friend Moore for referring to it, for it reminds me that I should have stated more particularly yesterday, when speaking of my crop of corn, in regard to the manure, that it may be understood how I got over ninety-three bushels to the acre. It is in the preparation of the soil, to begin with; it is in the preparation of the manure in the second place, and in the care of the crop in the third place. In regard to the preparation of the manure, I should say that potatoes, or any other seed, will grow a great deal better in manure that is thoroughly decomposed, not burned, than in green manure. It should be thoroughly decomposed and made so fine that as soon as the corn or the vegetable starts, the roots may take hold of that manure; and it is very essential that there should be manure enough upon the ground to carry the crop through the season. That I suspect is the whole secret of raising large crops.

While I am up, I will say, that I have been to Capt. Moore's farm, and seen the care and skill with which he conducts his business. Everything is in its time with him, and everything in its place. The captain has made an admirable appearance here to-day, but if you want to see Capt. Moore in his glory, you must go to old Concord, and see him on his farm.

Col. STONE. There is one point which I had hoped to have heard discussed here to-day which has not been referred to. I allude to the great importance of a rotation of crops in farming, and in market gardening also. We have a gentleman here who, if he sees fit, can discuss that question ably. Perhaps most of you had the pleasure of listening to him, some years ago, when he gave an admirable lecture on the subject. I refer to our worthy Secretary. I believe the time is coming when that point will be regarded as one of great importance. When we have settled these minor points, we shall learn, that in order to get the whole profit of the manure, the whole virtue of the soil, a rotation or succession of crops is necessary.

Now, gentlemen, I am not a market gardener; I am not what you would call a farmer. My department has been mostly the nursery, a department which does not properly come in here; but in the prosecution of the nursery business, (I think my

friend Hyde will bear me out in what I say), I have witnessed most extraordinary effects follow the carrying out of this principle of the rotation of crops. To illustrate the point I wish to come at, and which I wish to enforce upon your notice, I will say that in the preparation of the ground for apple-trees, for instance,—for we cannot grow pear-trees successfully in my immediate neighborhood,—we are obliged to prepare it very nicely, in order to be successful; as nicely as my friend Moore would prepare it for his vineyard or for garden vegetables. We plough deep, manure thoroughly, and then, in setting out the small plants, the seedling apples, we calculate that the ground is in a fit condition to carry those trees almost to their maturity. Now you will see that the growing of a crop of apple-trees successfully, which requires three or four, and sometimes five years, exhausts the soil of all its ingredients which the apple-tree calls for, or perhaps any deciduous tree calls for. A nurseryman who understands his business knows that it would be folly for him, after he has taken off that first crop to attempt to put a second crop upon that land, even if he manured equally as well as he did the first time, because his crop has exhausted the soil of certain things which are peculiarly necessary, and which can only be found in newer soil. My practice has been this: after my apple-trees have been removed, I find the land admirably adapted to the growth of evergreen trees. You all know what evergreen trees are—the spruce, the arbor vitæ, the hemlock, &c. Without remanuring that land, without any reparation, almost, except it be ploughing, I can set out evergreens, and get an admirable crop, because the elements which the evergreens call for still exist in that soil; because the elements which the evergreens call for are different from those which the apple-trees call for. I grow them three years, and then they pass away. What is the condition of the soil then? It is exhausted for the evergreen, it is exhausted for the deciduous tree, and you might say that the soil was entirely exhausted. But such is not always the case. I may plough that land thoroughly and lay it down to grass, without even putting any manure upon it, and raise a splendid crop of grass. Why? Because the grass calls for different elements in the soil from either of those kinds of trees. You see the point. It is so with the successful farmer. The time is coming when he will be

able to tell you just what crop to plant first, just what crop should follow that, and just what crop should follow as the third one, to get all the virtues of the soil, and keep it in good condition. Well, after I have taken off a good crop of grass for a year or two, that ground may be in very good condition, because it has recuperated itself, and the virtues which were exhausted by the preceding crops have been restored. Then I will go to work, remanure and prepare it, and perhaps raise another crop of apples, and so go on. That is the point I wish to bring to your notice.

Mr. WARD. Mr. Johnson stated that he had raised ninety-three bushels of corn to the acre. I would like to inquire the distance he planted his hills apart, and whether he planted it in drills?

Mr. JOHNSON. Three feet and a half one way, and as near three feet and a half as they could be the other way. They might fall two or three inches short, on the average.

Mr. FLINT. It occurs to me that the members of the Board have done most of the speaking this afternoon, and, in fact through the day. I am sure there are very many experienced cultivators of vegetables in this vicinity,—in Dighton, Somerset and other neighboring towns,—who could not only enlighten the Board, but interest the audience, and I really hope we shall have an opportunity to hear from some of them.

Judge LAPHAM. At the present moment I am not much of a farmer. My early experience was in that business, and some part of my subsequent life has been connected with it, and it has been a source of very great gratification and pleasure to me to listen to the remarks that have been made here upon the subjects that have been under discussion. Perhaps it may not be amiss to say that the suggestions which have been made by the chairman in regard to the rotation of crops correspond to the operations of nature. Among my early recollections is one of a forest of oak, chestnut and walnut of very large growth. Some of those trees were cut down, and there came up, in the midst of those large old trees that were left, as thick a growth of white pine as I ever saw anywhere, and the trees grew with remarkable rapidity, and with entire thriftiness and health. That entire growth of pine was subsequently cut away, and and there came up a growth of maple, chestnut and oak; there

was scarcely a pine-tree on the field. Therefore, if we observe the handiwork of the all-wise Beneficence, it would seem to strengthen the conviction to which you have arrived in reference to the succession of crops. Moreover, in those countries where agriculture has been pursued for centuries, they have found by experience that certain crops exhaust certain elements in the soil, and therefore a different crop flourishes more advantageously as the successor of the one by which those elements of the soil were exhausted. There is such a thing as adaptation of the soil to the plant that is grown upon it. I recollect that in my boyhood a neighbor of ours, not more than half a mile from our house, could raise balm in great abundance, but could not succeed in raising sage, while my mother could raise sage but had no success in raising balm. The result was an interchange of balm for sage, without duty. It was an illustration of the reciprocity principle. Whether the production would have been promoted if there had been a duty placed upon the articles, I leave for others to determine; but that was a matter of mutual exchange — of free trade — and resulted advantageously. The conclusion to which I arrived in relation to it was this: that there were certain elements of adaptation in the soil where the balm grew that were not adapted to sage, and, *vice versa*, that there were certain elements in the soil where the sage grew that were not adapted to balm. So that, if we will devote our attention to observing the facts as they arise, and endeavor to seize hold of, and profit by, those which come under our observation, we shall, I believe, make progress in relation to this matter of agriculture in all its departments. Therefore, I regard that man as the most successful cultivator who most closely and keenly observes, before entering into the cultivation of the crop that he may wish to raise, the conditions of the soil in which it is to grow; and every attempt to force a growth contrary to the existing conditions of climate and soil must in the long run result in failure. Some peculiar conditions of climate and season in a particular year may operate to make the attempt successful, but in the long run, what is not adapted to the soil will not be profitable to the farmer.

Then, if we look at this matter further, we find that in certain sections of the country fruit is grown very successfully — in some localities, apples; in other localities, pears. So far as

my observation goes, certain kinds of pears will flourish abundantly in certain localities, and not in others. A gentleman from this place who went to New Hampshire,—I think it was near the town of Meredith,—told me he tried pears, and found that the trees would grow with great thriftiness for a few years, and then they would die. He repeated the experiment for a succession of years, and always with the same result. There must have been something in the climate or soil that was not adapted to the pear. I suggested surrounding them with coarse sand or fine gravel, and he told me he would try the experiment. I do not know what has been the result. I believe an analysis of the outer bark of the apple shows fifty per cent. of lime. What is the result of observation? We find that the regions where the apple is most productive are those regions where limestone is most abundant, other things corresponding. Now, in the early orchards of Massachusetts and New England there was sufficient vegetable matter, with some lime, in the soil, to produce results corresponding with the hopes or wishes of those who planted the trees; but in the course of years those elements became exhausted, and hence we do not have such remunerative crops as formerly. Can we not supply the deficiency by the application of lime? That is one of the necessary elements in the composition of fruit. I do not know how far that may be practicable. I was speaking to my friend Slade here on the subject, and he told me that he had in some instances applied mortar and old plaster to trees, and found that the trees were more productive and the fruit fairer.

Now, in order to be successful farmers, it is essential that we should study the elements that enter into the composition of whatever we wish to produce. We find, in relation to certain grasses, for instance, that by the application of certain mineral manures, some fertilizing elements are drawn from the atmosphere, which, in combination with the fertility of the soil, insure a good crop.

When I was a boy I remember there was an old field that was so poor that it would not produce sward enough to hold together. It was ploughed up and potatoes raised on it, some manure being placed in the hills. There was no grass seed sown, but to my surprise then, as I was less experienced then than I am now, a bunch of clover came up the succeeding

year in almost every hill where potatoes had been planted. The explanation, as I apprehend it, was, that plaster was put upon the potatoes when they were growing. Whence came the seed, how or in what way it originated, or where the germ came from, I know not, but the fact I do know as a matter of ocular demonstration.

A few facts of that kind will go to show that the nourishing elements of plants may come, to a certain extent, from the atmosphere, but they come mostly from the soil, and that soil must be adapted in its nature and character to the condition of the plant that grows upon it.

Last evening I was greatly interested in the lecture upon Utah. In that lecture Prof. Chadbourne stated that since the Mormons settled there and commenced their system of irrigation, Salt Lake had risen year after year, until it had risen many feet. You will recollect that he said that Prof. Henry had suggested that the theory that trees produced moisture was not well founded, and that perhaps the professor was right. It seemed to me that he refuted the theory suggested by Prof. Henry, because here were rows of trees set, here were grass and vegetables growing, and these combined, as absorbers of moisture, would have a greater effect than a forest, — at least in my apprehension. It seems to me, therefore, that so far from weakening the theory that forests produce moisture, the statements of the lecturer corroborate and strengthen that position. And in connection with that matter, I will say that I believe time will show that the effects of the tornadoes that sweep over our Western States may be to a great extent averted by the planting of belts of wood, and that the terrible drouths to which they are subject may also be avoided, to a considerable extent, by the same means. And I do not speak in relation to this matter without confirmation from high authority, because one of the greatest writers of France — Chaptal — corroborates that idea in the position that he takes in relation to the effect upon climate of the cultivation of the soil. We read, many of us, in our youth, of the desert of Sahara, over which, it was said, nothing but hot winds blew ; but further examination has shown that, instead of being a vast desert, entirely barren, it has broad oases or fertile spots in it, and who can say that the time will not come when even that desert may be made to blossom as the rose, and

become as fertile a region as Utah has become? In view of the progress that has been made in the last fifty years in relation to agricultural implements, and in all the sciences connected with this great matter of agriculture, I believe the time will come when that desert and many other places now regarded as barren will be made to blossom as the rose, and yield food for the sustenance of mankind.

I have had some experience in relation to the reproduction of animals, which some of my friends have regarded with considerable doubt at any rate; but I think I can state, without indelicacy, that, so far at least as domestic animals are concerned, the sex may be to a great degree determined by the course that shall be pursued in relation to their treatment. At least, such has been my experience, and I believe it to be a well-established fact. We are yet in our infancy in relation to all these matters. We have advanced somewhat from the condition of the people of the East, where they plough with a crooked stick, but we have been very slow in making these changes. I recollect when I was a boy, my father wanted to get a new plough. He had seen a cast-iron plough, but he was doubtful about its merits, and he went away with the determination to buy an old-fashioned plough, but inasmuch as he could not get one, the dealers where he went having nothing but the new kind of plough, he brought home, with fear and trembling almost, a cast-iron plough. We used it a week in the spring of the year, and if he could not have obtained another, at the end of that week a hundred dollars would not have purchased it. It is just so with regard to many things. We are but in the beginning of progress, so far as the observation and examination of the operations of nature are concerned; but we are on the high road to progress. None of us will live to see the advancement that will yet be made in all matters pertaining to agriculture.

Col. STONE. I have been very much pleased with the judge's remarks on this occasion. He has touched upon a problem which I believe time will solve. I believe in the goodness of God. I do not believe He has ceased creating. He is creating every day, and if we are disposed to look for the evidence of it we shall find it. The gentleman's remarks on that point struck me very forcibly.

Adjourned to evening.

EVENING SESSION.

The Board reassembled at 7½ o'clock, to listen to a lecture by Mrs. EDNAH D. CHENEY. The audience was a very large one, and the speaker was heard with manifest interest and pleasure.

THE HORTICULTURAL EDUCATION OF WOMEN.

BY MRS. EDNAH D. CHENEY.

Ladies and Gentlemen:—I do not come before you to-night as an expert to give you any information as to the details of the noble science of agriculture, but only to present it to you in its relation to the great subject which is engaging all thoughtful minds in our community,—the education, employment and condition of women. I do not hope to give you any new facts, but only, if possible, to quicken and animate your thoughts, so that you may see the wide vista of usefulness and blessing which opens before us in the extension of this healthful pursuit to thousands whom custom, prejudice and inattention have hitherto kept from it.

Neither can I claim the charm of novelty for my subject. It is no new idea that women should till the ground and engage in all the varied duties of horticultural life. In the sober prose of fact, we find her in savage life bearing all the hard work of providing for the nourishment of the family. You remember the pathetic song of the negroes over Mungo Park—

“We pity the poor white man;
He has no mother to bring him food,
No wife to grind him corn.”

The pleasures of the chase, the excitements of war belong mainly to man; but woman does all the hard work. It is a great step in civilization when man begins to share her labors, and work is put upon a footing of honor.

In the inspired realm of poetry we find woman the helper in the field and the garden. The great poet, John Milton, all whose sins towards womankind may be forgotten in the large and beautiful vision he has given of our first mother, makes Adam cordially extend his invitation to her—

“To prune these growing plants and tend these flowers,
Which were it tollsome, yet with thee were sweet.”

It is when thus working together, that their happiness wins the admiration of the angels of heaven, and draws them down to converse with Man. When Satan seeks to work mischief, his first step is to divide them.

I ask you to proffer this same invitation to the women of Massachusetts, to the thousands of women who need this occupation for the benefit of their health, for the increase of their means of support and usefulness, and for its educational value, in developing their mental and moral powers.

Do not say the career is open and they need no invitation: "God helps those who help themselves." We cannot live thus hardly with each other; we need mutual help, support and encouragement. True, God does not help those who do *not* help themselves, but he is continually inviting, encouraging and stimulating us to exertion; and we must all do the same good service to those whose energies are paralyzed by prejudice, custom and self-indulgence.

We ask for women only a fair field and no favor at the last; but those who hold the field must open the gates for them; not always oblige them to climb over the high walls, guarded with many a pointed spike of sarcasm and contempt. The few with great gifts and heroic energy of character will always make their way through all obstacles, but it is necessary to make a highway for the multitude to walk in.

Even now women share largely in the out-door and farming work of the world, but it is usually only as driven by excess of poverty, and in a low and degrading manner, which drives those of any higher culture or refinement as far from it as possible.

The slave-driver found nothing in woman's constitution which kept her from the cotton-field, where, bending hour after hour over her task, the lash came down upon her if she rose to straighten her weary back. No wonder that the emancipated colored women shrank at once from even the lightest out-door labors of gardening, as the men for some time preferred raising any other crop to cultivating cotton.

We find that in England, in 1861, there were among women fifty-six thousand three hundred and fifty-eight out-door laborers. But their work was not only of the poorest kind and very ill paid, but generally lasting only for a small portion of the year.

We desire to elevate the out-door labor of woman from this crude, savage, ill-paid, ill-regulated work, into an industrial calling, which shall fitly employ her mind as well as her body, and which will give a range of occupation suited to every degree of culture and refinement, from the most accomplished lady to the most robust and needy woman.

All classes need new light and life in this direction, and the influence will spread in both directions. Work will be elevated by mental culture, and intellectual education will be broadened and invigorated by an alliance with work.

The first point I ask you to consider with me, is the imperative need of out-door life to develop the physical constitution and preserve the health of women. It would seem needless to argue the importance of the health of the mothers of the race, to farmers and horticulturists, and yet strangely enough it has come to be considered an inevitable thing that women should be sickly in body and feeble in constitution. From the undeniable fact, that on the average, woman is physically less strong than man, the astounding inference has been drawn, that the weaker she is the more of a woman she is. Because she is a little smaller in size than man, reduce her physical proportions to the minimum of size; because she is a little less strong, make her as weak as possible. This would be strange reasoning to apply on the farm or in the garden. The willow is not so sturdy as the oak. Shall we starve it into a puny sapling? This is not the method of nature. She is constantly seeking to restore equilibrium. She carefully balances the masculine and feminine traits by the double parentage, and by the transmission of strong peculiarities in the opposite sex. She seeks to lessen differences, and in the finest types of humanity there is always something of the characteristics of both sexes. So art has followed her in its representations. The Greek Apollo has the beauty and grace of a woman, with masculine strength and fire; the Diana and the Minerva have masculine freedom and courage, with feminine beauty and majesty. Only in the extreme representations, as in Hercules and Venus, are the attributes of sex strongly emphasized. In later art, the most revered of men—Jesus of Nazareth—has been always represented with so much of the feminine attributes, that our masculine age is now protesting strongly against the painter's ideal.

But our one-sided civilization has sought to perpetuate the widest departures from the original type, and to produce a monster of curious formation, in which weakness and imbecility are the predominant traits. This physical degradation of woman has reacted upon the whole race,—the puny, sickly mother transmits her defects not alone to her daughters, but the sons partake of the very infirmities which they have allotted to their sisters.

It would be a curious study to trace out the extreme limits of muscular power in woman. Mr. Crafts told us last year of the Amazonian warriors of Dahomey, who take equal share with the men in all the dangers and toils of war, and who often enter into direct competition with them, and beat them on their own ground.

The Comte de Paris found that in some of the iron works in England, women are employed to stack large bars of iron after they have been hammered. For this labor, which no strong, healthy man would undertake for less than two shillings and threepence a day, they are paid only a shilling.

In Germany, Switzerland and France, women take part in all the labors of the field, and are harnessed with the cows into the plough, while the man walks lazily beside them.

We know what severe field labors the Southern women underwent under the oppression of slavery; a Southern planter once told me that women ploughed better than men.

Irving, in his *Life of Mohammed*, gives the following striking account of the strength and courage of the Arabian women, in the wars which were carried on for the extension of the Mohammedan religion. It shows how hardy were their habits, and how little their education differed from that of the men.

If according to the vulgar but erroneous idea, the Mohammedan did not let woman have a soul with which to take her share in the joys of the next world, he at least allowed a free development of the body, so that she had some chance for life and health in this. Irving writes:—

“This done, the captors went into their tents to carouse and make merry with the spoils, leaving the women among the baggage, bewailing their captive state.

“Caulah, however, was the worthy sister of Derar. Instead of weeping and wringing her hands, she reproached her com-

panions for their weakness. 'What!' cried she, 'shall we, the daughters of warriors and followers of Mohammed, submit to be the slaves and paramours of barbarians and idolaters? For my part, sooner will I die!'

"Among her fellow-captives were women, descendants, as it is supposed, of the Amalekites of old, and others of the tribe of Himiar, all bold viragos, accustomed from their youth to mount the horse, ply the bow and launch the javelin. They were roused by the appeal of Caulah. 'What, however, can we do,' cried they, 'having neither sword, nor lance, nor bow?'

"'Let us each take a tent pole,' replied Caulah, 'and defend ourselves to the utmost. God may deliver us; if not, we shall die and be at rest, leaving no stain upon our country.' She was seconded by a resolute woman named Offeirah. Her words prevailed. They all armed themselves with tent poles, and Caulah placed them closely side by side in a circle. 'Stand firm,' said she. 'Let no one pass between you; parry the weapons of your assailants, and strike at their heads.'

"With Caulah, as with her brother, the word was accompanied by the deed; for scarce had she spoken, when a Greek soldier, happening to approach, with one blow of her staff she shattered his skull.

"The noise brought the carousers from the tents. They surrounded the women and sought to pacify them; but whoever came within reach of their staves was sure to suffer. Peter was struck with the matchless form and glowing beauty of Caulah, as she stood fierce and fearless, dealing her blows on all who approached."

These instances show that there is nothing in the feminine constitution itself which prevents woman from bearing the hardest out-of-door work. The next question is, What degree of this work is compatible with the greatest health? Does excessive toil unfit her for the holy and beautiful functions of maternity? Without entering into a full discussion of this question we may assert, that while excessive compulsory toil impairs the health and disorders the functions of the system, it is less injurious than self-indulgence and idleness. Is there not a medium between the Amazonian warrior of Dahomey, or the slave woman of Georgia, and the pampered woman of

fashion, whose only labor is to kill the time? “Dire labor, indeed it is, and weary woe.”

Indeed, so great has the disbelief in woman's physical powers become, that it is hardly thought possible that health can be her portion. Michelet, whose chivalric respect for woman amounts almost to adoration, considers her wholly as an invalid, a being whose tenderness and weakness call for the support and care of men and so develop beautiful traits in her, and kind and generous qualities in him.

Should this be the ideal of American women?

Is it not rather the effect of custom, derived from Oriental despotism which believes woman to be safe only within four walls, and dares not trust her God-given nature under the light of God's free heaven?

We must strive to make the home include the garden, orchard and the field, as well as the cooking-stove and the nursery. Health, work and love will make a home, which will be a safer shelter for woman's purity than prison bars and jealous keepers. We need to raise the standard of health for woman, so that she shall not be content with the life of semi-invalidism, which is the position of the majority of the sex at the present day.

How many a father toils night and day, to lay up a fortune for his daughters! What a fortune he might give them in health, strength and enjoyment, if he would only cast off from them the trammels of custom and prejudice!

How much money the quack doctor would make out of a medicine to cure the sufferings of woman, but the true medicine which is free to all, work and fresh air, is, like all God's best gifts, so freely offered that it is neither accepted with thankfulness or used with care!

The most trying and painful form of invalidism, which is strikingly characteristic of our American life, is nervous weakness and irritability. It is superfluous to argue the existence of a fact so well known to all medical practitioners, and we fear equally familiar to almost every home circle. This state is unquestionably due to the sedentary and confined life of women, and the intellectual stimulus of education, without the healthy corrective of physical exercise and out-door life.

A striking proof of this is found in the fact, for which I have the authority of more than one German physician, that nervous diseases are rapidly increasing among women in Germany. This is largely to be attributed to the exciting school life.

Admirable as the Prussian system of schools is in its intellectual processes, it fails to recognize the divine laws for the development of life and health. It is part of the machinery which cramps the individual to perfect the system. That culture which makes soldiers of men and invalids of women, is not the perfect model for our republican institutions.

Contact with the vegetable world seems to be nature's corrective for excessive mental action in any direction. The touch of mother-earth renews strength and energy exhausted in life's hardest conflicts.

As the air is purified by the life and growth of plants; as the water is kept sweet by the balance of animal and vegetable life, so the fresh, unspoiled life of nature seems to renew human life, to cool its feverish heat, restore its wasted energy, and bring it anew into harmony with the universal order of things.

Gardening requires simple, healthful habits. It is now as in paradise that the freshness of the morning invites to labor —

“Awake! the morning shines, and the fresh field
Calls us; we lose the prime to mark how spring
Our tender plants; how blows the citron grove;
What drops the myrrh, and what the balmy reed;
How nature paints her colors, how the bee
Sits on the bloom, extracting liquid sweet.”

The gardener must be up early in the morning, but she need not keep midnight vigils; her charges go early to sleep and will not awaken her with their cries. Even the greenhouse is not kept so hot as our sitting-rooms and workshops. The plants are as sensitive to coal gas as our children's lungs, and will show the presence of bad air by unmistakable signs. But it is the out-door life of gardening which is most precious. It is not, as some suppose, confined to a few short weeks of summer; but from the first of April, or even earlier, when the snow-drop begins to droop its modest head, to the last of November, when the golden chrysanthemum gathers up the glory of the

summer, and breathes it out in its rich bloom and healthful fragrance, there is always something to be done in the garden.

Who does not experience the exhilarating effect in going out from the busy city into the woods and fields? And the nearer we come to nature, the closer our relations with the earth and its vegetable productions, the more strongly and sweetly do we feel this beneficent power. Especially is this influence good in all the grief and trial which come from emotional relations, from wounded sensibilities and crushed affections, to which woman's nature and circumstances render her so especially liable. There is no reproach, no taunt or sneer from the rose or the lily, and the fragrance of the flowers she tends silently soothes the sorrows of which they are unconscious.

Without probing the secrets of her heart, "they guess at the wound, and heal with secret hand." They minister to her who tends them with love from their Divine Creator, and she again is rich in the power to carry this message of love so beautifully written out to the sufferers who are shut out from their native world.

The physician may send his rich patient to the mineral springs, the seashore or the mountains, but the majority of women must find their restorative within the circle of their daily activities.

During the prevalence of the great cholera epidemic in the decade between 1830-40, the city council of Berlin assigned all the vacant lots of land in the city to the poor women to be used for gardening purposes. On them they raised vegetables for the use of their families. The result was a very great improvement in the health of the city and of the women engaged in the work.

In the vicinity of Boston many German women devote themselves to out-door work during the summer months. They are engaged in gathering smaller fruits and vegetables and weeding out lawns (which they are said to do much better than men), and in the laying out and preparation of gardens.

In many instances they have refused much higher wages for in-door work of various kinds, saying "We will not work in-doors while we can get out-of-door work. The rich ladies get their vacation in travelling, we must keep up our health and vigor by labor on the land."

A school-teacher finding her health giving out from her mental labors, and unable from the small amount of her salary to seek refreshment at expensive watering places, resolved to devote herself to her garden during her summer vacation. She found in the autumn that she had gained a greater degree of vigor than ever before, and that instead of a doctor's bill to pay, she had a hundred dollars in her pocket as the result of her summer's work.

Our climate is a pretty tough one, but like every other brave enemy, so often a friend in disguise, the only way to conquer it is to meet it boldly. None suffer so little from the weather as those who are out in it every day, and all day. Wise old Dr. Jackson used to say, "that the danger was in staying in the house," and it is most often there, by what in poetry we call "the family hearth and cheerful fireside," but which is too often in fact the air-tight stove and the hot-air register, that catarrhs and consumptions begin, and not out in the east wind or north-east snowstorm.

The next consideration which makes the wider opening of horticultural pursuits to women of great importance, is the wide field of profitable labor which it opens. Undoubtedly the question of woman's labor is an intricate and difficult problem; it is complicated by the fact that she is fitted by nature for part of the duties of life, whose value is so difficult to estimate in money that the world has settled the question by usually considering them worth nothing at all. The savage has his easy way of solving the problem of woman's work. He settles it that woman is to do all the work and he—none! This has the merit of simplicity, but has not on the whole been found especially conducive to domestic felicity or the development of higher qualities in either man or woman.

Chivalry took the other view of the subject, and exalting the lady into a porcelain angel, proclaimed her to be only the ornament of society. This, too, was consistent as regarded the lady of high degree, and chivalry took small note of any other. The noble lady was the ward of the state or king, who was bound to provide her with a dowry and—a husband. But at present we vibrate between these two extremes. The working-woman can do any work she pleases for very small pay, as in the Tyndale iron works, and the fine lady may do absolutely nothing, if she

inherit a fortune or have a rich husband to supply her needs. Between these extremes the great mass of women suffer from wasted energies, idleness enforced by prejudice and custom, feverish excitement caused by immethodical and ill-regulated work, and monotonous toil at the needle or the loom, repaid by a scanty pittance, which furnishes them no opportunities for self-culture or recreation.

A few facts in relation to woman's work in Germany will illustrate this point. At present there is so much admiration for German institutions that these instances of what woman's life is there struck me very forcibly, and as the same causes exist here to a great degree, the results must be somewhat parallel. In one city of two or three hundred thousand inhabitants there are 43,417 unmarried women who earn nothing, who contribute nothing to the national support or prosperity, but are mainly supported by relatives, the utmost they do being some little contribution to household work. But alongside of this is the painfully significant fact, that eighty per cent. of all the recipients of alms are widows, women who having given their lives in unpaid industry or idleness, and depended upon a man for all productive work, find their resources cut off by his death, and are absolutely unable to take care of themselves.

Out of a hundred widows in Berlin, eighty-three are obliged to earn their living. Another item shows still more plainly how badly this social economy works for women.

With advancing age the number of men who work for a living decreases; the number of women increases. The average man can from his work lay up a support for his old age. The average woman spends the best years of her life in idleness or in working for her husband and children only, and in her old age has to go to work for her bread.

Undoubtedly the case is worse in Berlin than it is here, for more of the old feeling exists against women's work there than here, but the prejudice is not obliterated, and few young women above the pressure of absolute want are taught to look upon their own exertions as the means of their future support.

We cannot afford economically to lose the work of so many women. With a large majority of women in Massachusetts, the productive industry of our State must gradually fall behind that of other communities, unless intelligent and thorough work is

done in due proportion by women as well as men. In the report of your Secretary, I read that the great demand of Western Massachusetts is for more laborers, and they call loudly for the Chinaman. Let the Chinaman come by all means, but give us work for the women first. Gardening is an occupation especially fitting to women, not only on account of its hygienic value, but by its power of adaptation to all the circumstances of her social life. We are quite ready to say, with Margaret Fuller, "Let them be sea captains if they will," and yet we can often imagine it a serious interruption to the home circle to have the wife and mother absent on a whaling voyage. Neither does the hum of the machine shop or the factory add much to the pleasure of the fireside. But the field, the orchard, the garden and the green-house, instead of detracting from the duties and joys of home, will only add to them health, freedom, comfort and beauty. Instead of the invalid mother lying on her couch, entreating her little ones to spare her poor weary head, we may have her out in the fresh air, with the children about her, aiding her in the labor which is to add comfort to the home, by supplying wholesome and nourishing food, and which will give grace and beauty to the home surroundings. She may superintend the work on a large estate, if she have abundant means, or with a little quarter-acre lot, she may even at odd moments raise the potatoes, beans or cabbages which are to give variety to the daily meals. Let me give you a few instances from my own observation.

In the neighborhood of Boston, a distinguished lady has now for many years found her chief interest and occupation in the management of her green-house and garden. With ample pecuniary resources, she has been able to indulge her taste, in producing the finest specimens in quality of flowers and fruit. She constantly takes the prizes at horticultural shows for peaches, plums, strawberries and other fruits, as well as flowers. Finding the men whom she employed unfaithful or incompetent, she took a young lad whom she has educated to carry out her plans. He is now, after fifteen years' experience, a skilful gardener, able to relieve her of all details in the care of her plants; while she enjoys the success of her plans and the perfection of her work.

In my own town are two young French women, who beside their labors in teaching, have cultivated their garden with their own hands, raising all the vegetables for their own use.

In contrast to these women of high culture and large opportunities, rises up before me the figure of a brave Irish woman, who when an invalid daughter and three young children were left to her care, worked all day in a mill, and in the hours before and after her daily toil with her own hands dug and planted her little garden, which, as she said, "always furnished them with provisions, so that through the whole dark period of the war, they never failed to have enough to eat."

This occupation is also specially adapted to women by its educational value. The great defect in woman's education is, that it has no practical bearing. She learns statements, tables and facts, but seldom rises to the perception of laws and their application.

Although exercising the most important function in the care of the health and life of the human race, which during the dangerous periods of infancy and youth is almost entirely confided to her care, she is yet commonly ignorant of physiological laws, and accustomed to base her actions upon vague tradition, or a blind reliance on outside authority. If her children are taken sick and die, she esteems herself unfortunate or providentially afflicted for the good of her soul. But she rarely traces out the causes of disease in the insufficiency of her own knowledge, or the unfaithfulness of her care. But sympathy and religion are not expected to console the gardener for the loss of his crops. Science has plainly demonstrated that "as we sow, so must we reap," and woman as well as man when she practises horticulture, will seek out the cause why her neighbor's potatoes and cabbages are better than hers, or her rose-bushes are devoured by slugs while his are free. All that she learns in this department will have its value in her maternal and home life. And then again, the love of beauty, so prominent in woman's nature, may find here its full development. From the laying out of an estate to the arrangement of a bouquet, there is opportunity for all the order, symmetry, color and sentiment which can be expressed in outward symbols. Use, love and beauty are all combined in the work, and from the solid foundation of material economy, may be built up a structure of

grace and beauty, which lifts her occupation into the region of art.

Moreover, the very laws and conditions of vegetable life are full of instructive analogy to human life. The mother will gather many a lesson of wisdom in rearing these mute but sensitive creatures, which will guide her in bringing up her more precious charges. I remember the comfort which a young mother, over-anxious about a delicate baby, received from a horticulturist who told her that he had often observed his plants which seemed quite feeble the first year, gain health and vigor in the second year by judicious care. The sturdy, healthy boy now rewards his mother's faith in nature's teachings. So the garden is full of the most suggestive illustration of moral and religious truth. The most spiritual of teachers told us to "observe the lilies how they grow"; and drew precious lessons from them. Often when the mother seeks diligently for words sacred enough in which to impart the holy mysteries of religion and life, she will find, as Wilkinson has wisely said, that the processes of nature in the growth and development of plants will supply her with the pure and beautiful symbolism she needs in which to clothe her thought.

But the full value of Horticulture for woman, either as improving her health, increasing her industrial resources or developing her mental powers, cannot be gained by desultory attention to this work regarded only as a elegant amusement, or as an adjunct to ordinary pursuits.

That the stream of culture may flow beneficently through all the community, we must raise the fountain-head high; at some points women must devote themselves to the science of horticulture, or to the practice of it as a noble profession, giving it their best energies, and reaping its richest rewards.

Michael Angelo well said that the light of the market-place was the true test of the value of the statue. It is so with all work. The dilettante and the amateur are never sure that their faults are not partially glossed over by the courtesy of society; but the price current is no respecter of persons, and the best strawberries will command the highest price, whether raised by man or woman. It is this test of fair and open competition alone, which will give to woman's work thoroughness, finish and completeness.

We all know how much pains have of late been taken and what large sums have been expended to further the agricultural education of young men. Others can tell you the methods and results much better than I can. Within the last three years, efforts have been made in this community, to extend the same advantages to women. Miss Emma Marwedel, a German lady, came to this country, as affording better opportunities and freer scope for developing her plan of an integral education for woman, including horticulture. Owing, perhaps, to the largeness of her undertaking and to other reasons, her scheme has not met with definite success, but the large esteem and sympathy offered her show a consciousness in the public mind of the value of the thought which she represented.

Even before her arrival many thoughtful women in our own country had turned their attention to this subject.

The New England Women's Club of Boston, held many discussions upon the best means of calling the attention of women to the practice of horticulture, and after much deliberation, a society was organized in Boston, whose object was to provide a horticultural school for women. They hoped to arouse a general interest in the subject, and to prepare at least a small number of women to undertake gardening as a business.

Soon after beginning their preparations they heard of two other institutions which might at some time be in a condition to undertake this work.

It was rumored that the fine Bussey estate in West Roxbury was to be devoted to a general school of agriculture and horticulture, under the direction of Harvard College. The society conferred with some of the officers of the college, in regard to coöperation in the chosen work, by opening the school to women. But at this time they received no encouragement that such would be the case.

Mr. John Simmons also left a large bequest to found a college for the industrial education of women, and it was understood that horticulture was one of the objects to be promoted by the institution. But after conference with one of the trustees, it was found that the restrictions of the will were such, that no practical work could be undertaken for many years, and it was doubtful in what direction the resources of the fund would be used.

The directors of the society therefore decided to go on with their own independent school, on a small scale; the number of applicants for admission seeming to show that many young women were ready and desirous of an opportunity for instruction. They accordingly hired a small estate near Boston, put up a green-house, and opened the school for theoretical and practical instruction in horticulture.

They have had at no time more than seven or eight pupils. This fact has been mainly owing to the large expense necessarily attending the school, as it was not endowed with any permanent funds. The cost for board and tuition was about \$400 a year, a sum usually beyond the means of women who are looking forward to supporting themselves for life. Few fathers have yet learned to look upon education for women as a profitable investment for the future.

After the school had been in operation more than a year, the society received an offer of \$5,000 from Miss Nabby Joy's estate, as the foundation for a free scholarship. It therefore became incorporated, with right to hold real and personal estate.

Last spring, when Harvard College published its programme for lectures at the Bussey Institution, it announced that the lectures on chemistry, entomology and horticulture would be open to women, with opportunity also for practical experience in the garden and in the green-houses.

Thus our venerable Alma Mater has opened two little side doors to the daughters of Massachusetts, in the university lectures at Cambridge, and the Horticultural College at West Roxbury.

We trust that ere long, obeying the spirit of the age, she will fling wide open her portals to sons and daughters alike, crying only, "All ye who thirst, come hither and drink."

In some important particulars the plan of the Bussey Institution differs so much from that of the Horticultural School, that we do not yet feel sure that it will wholly supply its place. It is a branch of Harvard College, and supposes its pupils to have already shared the advantages of that venerable institution. It therefore gives no elementary instruction in any of the sciences connected with horticulture, but only lectures on their application to the special object of the school. As young

women are not admitted to the previous studies at Harvard, this puts them at a disadvantage in comparison with young men. Still, I think graduates of our good high schools would find no difficulty in following out the course at Bussey.

At the school at Newton it was especially desired to give an opening to those women who are at once anxious to make horticulture a profitable business, and we therefore tried to provide them a good home at a low price, where they could live at a cheap rate while pursuing their studies. At West Roxbury no such provision is made for either men or women, so that its advantages are at present confined to those who can live within a convenient distance.

So strongly did the directors feel the need of these additional opportunities for women, that they considered the project of establishing a home school in the neighborhood of the Bussey Institution, where young women could live and study under careful superintendence, and yet have the opportunity of attending the college lectures. But the subject is yet so wholly new, and the Bussey Institution offers so much that has never before been within the reach of women, that the directors do not at present feel justified in asking from the public the means to support a separate school.

Retaining their organization, they will use the interest of the funds in their hands, in assisting women of superior talents and persistent determination of purpose, to obtain an education in horticulture, either at the Bussey Institution or elsewhere, and will endeavor to spread the idea of the fitness of this occupation for women, and to awaken an interest among them for the work. The President, Miss Abby W. May, and the Secretary, Miss Lucia Peabody, of Boston, are a committee for the management of this fund, and will decide upon its appropriation.

Their two years' experience has been of great value in testing the truth of the ideas which I have endeavored to enforce. The pupils have been from the most cultivated classes in society.

One point of great interest was in regard to the effect of the school life on the health of the pupils. The impression seemed to get abroad that the school was to be a hospital or sanitarium

for invalids. The directors in vain tried to disabuse the public mind of this idea, and were obliged to refuse many who wished to come, for this reason solely. Owing to the house not being full, a few persons were received as boarders, who did not undertake to do their share of the work of the school. For it was no play gardening. There was hard work done, and a great deal of it. Except the original preparation of the ground, which was in a very rough state, and the tending of the furnaces, &c., the pupils with their teacher, although so few in number, which made it much harder, did all the work in the garden and green-house.

The first spring was especially cold and chilly, and the following summer was unusually dry, hot and uncomfortable, but the young women worked several hours a day in the garden, and there was not a case of sickness, or even severe cold in consequence. They took charge of the green-house in winter, of all the potting of plants, slips, cuttings, &c., the regulation of heat, by night and day, without suffering at all from exposure, although the situation of the green-house obliged them to traverse a considerable distance in going to and from it.

We watched, with some anxiety, even those who were considered perfectly healthy, lest the unusual labor and exposure might have bad results, but after careful inquiry from both directors and pupils, I can safely affirm that there was not an instance of any sickness attributable to their occupation. A few who came as invalids were not miraculously cured, but they all felt much better for the work. The relief from wearing sedentary employment, the life in the fresh air, and the absorbing interest of the occupation proved potent cordials to them. Every one interested in the school felt thoroughly satisfied of its beneficial results in this respect.

Still, we would not be understood as recommending gardening as a universal panacea, which will cure all the ills of life, though used without care or wisdom. It is possible for men or women to get rheumatism by kneeling on the damp ground in the spring, to attend their hot-beds. And yet a physician assures me that she finds that even her invalid patients do not take cold from it as she expected. It is strength to bear exposure, not freedom from exposure, which insures health.

One may experience evil results from too long remaining in the warm, damp air of ill-ventilated green-houses. But gardeners of long experience tell me they have suffered no evil from their work.

The same conditions of free circulation and purity of air, which are essential to human health, are important to the life and growth of plants.

The careful drainage which farmers prize so highly, improves the health of the neighborhood, and though it is certainly possible for farmers and gardeners to get sick, there is no excuse for it in their occupation if rightly managed. Like every business it has its advantages and trials. We must use prudence and intelligence in overcoming its difficulties.

Our experience was too short to be of much value, in regard to the economic results of woman's gardening, although the sales from the green-house and garden were quite equal to our expectations.

One of the pupils has opened a green-house in Brookline, under favorable auspices, and will test for herself the possibility of her success in business. She has already a fair prospect, although she had but little capital to start with, and is now able to meet applications for plants and bouquets.

It certainly shows the wisdom of Harvard College in opening the school to women, that the only attendants on the lectures at first were young women who passed into it from our Horticultural School, who are pursuing their studies there with great interest. Even now women are in a decided majority there. I trust that this will not long be the case, however, as I believe that men and women would study and work together with as great mutual advantage there, as Adam and Eve did in the first Garden of Eden.

I hope that the young women of our community will not be insensible to the advantages offered to them by this richly endowed institution.

I have no doubt that its officers and professors are sincere and hearty in their intention to give them every opportunity for useful study and practice. The ignorant farmer or gardener no longer stands an equal chance with his educated neighbor, and women, in entering on this profession, must make the most of every advantage open to them.

The experiment of the Bussey Institution is yet too new to make it proper to criticise its methods or predict its success. Its efforts must be tentative, and its officers must learn from experience, what are the needs of those who are to enter on this work as a practical profession.

With such ample means, and the best intelligence of the community to guide them, it ought to become a source of the widest influence and the greatest good. It is especially valuable as combining high intellectual culture with manual labor.

For the same reason we welcome the example of Vassar College in organizing a floral department, and encouraging pupils in the intervals of intellectual study to work in their gardens.

We especially need to conquer the prejudice which connects the idea of manual labor, out doors, with a servile or impoverished condition. Women, too, must learn to respect the idea of working for money. Labor gains in dignity, instead of losing, when it is done for the benefit of others, and not for our own enjoyment. And money is a very simple and convenient test of the value of our work. To work well, and sell the products of your work, is the surest way of benefiting the community. She who, by the improved culture of strawberries, shall put down their price ten cents a box, will place them within the reach of many a poor, feverish sufferer, to whom she cannot directly minister; and by the intelligent care of her green-house, she may help to produce flowers in such abundance, that it will be no longer the exclusive privilege of the rich to place the winter rose in the cold hand of the departed friend.

Many women have been very successful at the West in cultivating farms and gardens, and also in Vineland, New Jersey, where they share in the management of the gardens.

But we cannot rely mainly upon colleges or schools to make this occupation general among women. Only a small number of those who need out-door occupation will ever be able to attend them, yet if they do their work well their good influence will be widely felt.

It is not Harvard College alone which has educated New England; not Amherst to which we owe the rapid improvement in agriculture, during the last few years. So we cannot expect

that the Bussey Institution will do all that is needed to induce women to give their minds to this work. We want a widespread interest in the subject. I rejoice in the welcome which this Board gives to women at their sittings, and I trust that those who have a practical acquaintance with the subject will take active part in its discussions. It is not at all unusual for women to take prizes at horticultural shows. I hope in future, at agricultural fairs, they will display squashes and turnips, melons and pears, of their own raising, instead of patch-work bed-quilts, worsted work of strange device, and paintings which savor strongly of boarding-school teaching.

Women need to grapple with realities and take hold of the real work of the world earnestly, not merely to employ odd moments in useless prettinesses.

I am told, by those who have lately been in England, that it is delightful to see the rapidly-growing love of horticulture there among all classes. The magnificent floral exhibitions in London are attended by all the wealth, fashion and beauty of the great metropolis, and ladies of the highest rank discuss, learnedly, the merits of a new seedling, or favorite variety, as they do the charms of an opera singer. This results very much from the love of country life so common among the English aristocracy. But the taste is spreading very fast through all ranks. Rows of houses built to let are provided with hanging green-houses. In that milder climate, the simple protection of glass is all that is needed for many choice species of plants, and every house is proud of the display made in its windows. With us it has been found that no money brings in a greater return of health and pleasure to the family, than that spent in the little green-house opening out of the sitting-room or parlor. It should not be an exclusive luxury for the rich; it may be brought within very moderate means.

I remember one family of women who, having little property but the house in which they lived, have supported themselves for years by the needle—one pet sister excepted, whose artistic talent has been widely fostered to be the joy and pride of all. As they sat sewing in their pleasant room, always full of house-plants reared by their own care, and talked to you of the choicest works of art and literature, even the poor labor of sewing seemed to lose its primeval curse, and they seemed free

and happy in it. A small sum of money having been given them to use for their pleasure, they unanimously agreed to devote it to a green-house, in which they could more perfectly raise the flowers which they love so much. Now they have their little winter garden, always fragrant with beauty, giving them refreshment after toil, and cheer and comfort in every hour of sadness.

It has always seemed to me that flowers were the most perfect expression of the Divine Love. They are useful, it is true, but the practical does not obtrude itself; they seem to bloom for the sake of expressing the love and joy that call them into being. There is no joy so sacred, no sorrow so profound and sensitive, no human love so tender and so true, that it may not find expression in these beautiful symbols. They do not intrude; they are never out of place. The peasant may bring the spring daisy to a queen, and feel that it is a fit offering; the lover brings a rose to his chosen maiden and needs no other words; we place the lily on the altar and it requires no consecrating touch. I have seen poor little children pick up the withered bouquets which had been thrown out on the ash barrels of wealthy houses, and have felt how universal is this love of the beautiful, and what a good work he is doing who helps to put flowers within the reach of all.

So, too, our poet philosopher has well said, "If a man should send to me to come a hundred miles to visit him, and should set before me a basket of fine summer fruit, I should think there was some proportion between the labor and the reward."

Other considerations might be named, incidentally showing the advantages of out-door life and occupation for women. It certainly would tend towards a reform in dress. Imagine a fashionably dressed woman, with trailing skirt, flounces and bows, with streaming ribbons, and dangling laces, engaged in pruning her bushes and rearing her vines; the feathers of her hat catching among the branches, the trains of her skirts knocking down flower-pots in her green-house; her garments bearing witness of nature's great provision for carrying seeds to a distance.

Does it not show that devotion to a useful and simple work will inevitably tend to produce a simple and convenient style of dress? Whether it should be the short petticoat and broad hat

of the Swiss woman, or the English beaver hat, coat and waist-coat of the equestrienne, or the much derided Bloomer costume, is uncertain, but it is absolutely requisite that the gardener should have shoes which will not melt like salt with the least drop of rain or dew, skirts which are not ruined by contact with mother earth, and will not tear with the first touch of a bramble, waists which are loose enough to allow free use of the arms, an arrangement of the hair which will bear both wind and moisture, and a hat which will stay on the head under all disadvantages.

Since we admire the Greek Diana, "the chaste huntress with the silver bow," we can certainly imagine a costume which will admit of all this and yet be both classical and becoming.

I once received a visit from two ladies from the country. As I had lately had a bride for a visitor with trunks which, like the Vicar of Wakefield's family picture, could not be got upstairs or into any room in the house, I was as much pleased as the hackman, with the very modest size of their trunk. I said, "Is this all the baggage you have brought?" "Oh! yes," they replied. The next morning one of the ladies brought me down a fine large Hubbard squash of her own raising, which had also come in the trunk! It filled up the measure of my amazement, and set me to thinking whether, when ladies prided themselves on taking choice specimens of squashes and pumpkins to the city, they would not economize in the size of their hoops and the number of their flounces. A gourmand who was very fond of pork, had tried every means of giving it additional flavor and relish. He had eaten it broiled, and boiled, roasted and fried, in brawn and in sausages, and every other imaginable way. At last he said, "I wish I had been born a Jew, for that sense of a forbidden luxury is the only thing which I can imagine would impart a new relish to pork."

Now as the season of Thanksgiving approaches, all the arts of the housewife are exhausted to give new zest and flavor to the "Thanksgiving dinner." Would it not, O devoted husband and father, add a charm to this long cherished festival, to know that the pumpkins and squashes were of your wife's raising, or that the ruddy glow on the apple reflected the blooming cheek of your daughter, made healthy by the summer spent in the orchard or garden? Would it not indeed make a new day of thanksgiving and praise for us all, if the hours now given by

women to idle and frivolous pursuits, could thus be employed in adding new comfort and beauty to life, "so that the wilderness and solitary place should be glad for them, and the desert should rejoice and blossom as the rose" ?

Maj. PHINNEY. I move that the thanks of the meeting be tendered Mrs. CHENEY for the beautiful and highly instructive lecture to which we have listened.

The CHAIRMAN. It has often been thrown in the teeth of our lady friends that the first woman sinned herself and the race out of the Garden of Eden ; but her representatives, like Lady Macbeth, who, after inciting her husband to the murder of the king, repented, and sought to keep him from the commission of further crimes, have ever since been trying to get us back ; and they have now inaugurated a system by which they hope to lead us back to that garden, and assist to cultivate it. Mrs. Cheney is connected with the first institution for that purpose ever established, and I hope that the State Board of Agriculture and all farmers will help on this good work, whose results will be the advancement, not only of woman, but of men,—husbands, fathers, brothers and sons. I take great pleasure, therefore, in putting the resolution.

The resolution was adopted unanimously.

Rev. E. PORTER DYER, of Shrewsbury, then read an amusing poem, which was frequently interrupted by laughter and applause.

The Board then adjourned to Thursday morning, at half-past nine o'clock.

THIRD DAY.

THURSDAY, December 23.

The session opened at half-past nine o'clock, and Maj. PHINNEY, of Barnstable, was called to the chair.

The Chairman stated that the first subject for discussion was

CATTLE HUSBANDRY,

which was opened by a paper by the Secretary of the Board, on "The Principles of Breeding," of which the following is an abstract :—

The natural laws which apply to the increase of the stock upon the farm are comprehended under the general term of the principles of breeding. Every farmer has observed marked peculiarities in his animals. Some of them fatten readily, for example, and pay by their rapid increase of weight for all the food they consume, while others do not. Some cows in the dairy pay richly by their abundant yield, or by the high quality of their product for the cost of keeping with the addition of an abundant profit, while others fall below this point and actually entail a loss upon the owner. There is a want of uniformity, a great difference in the intrinsic value, and the object of the intelligent breeder is to search out the rules which govern the results he seeks to obtain, and to ascertain what system he can adopt to make sure of attaining such results. Experience has shown that the same fixed or natural laws apply uniformly to all classes of stock, as horses, cattle, sheep, swine, &c., but there is always more or less difficulty in their application in practice, from the imperfect knowledge we have of the peculiarities of individual animals.

The old maxim that "like produces like," is liable to be misapplied, and the error will appear in certain contradictory results which we find from time to time in the course of our experience. This arises in part from the fact that certain qualities are latent or hidden and do not appear to the eye. In order to breed with certainty, it is essential that the qualities we desire to obtain should be inherent in both parents. If the two animals possess opposing or unlike qualities the characteristics of the offspring will follow the one which possesses the strongest hereditary power, or the strongest power of transmitting its peculiarities, the greatest unity of influence and fixity of type.

If both parents possess a like character and fixity of type the result will be a character similar to that of the parents, but in a more distinctly marked degree. Two animals possessing this strong similarity of characteristics will not only perpetuate their corresponding peculiarities, but intensify them in their offspring, and each successive generation which they produce receives an increase of hereditary force or power of transmitting its own peculiarities. But this power invariably diminishes if the parents instead of possessing this likeness of character really possess opposite or antagonistic characteristics. We cannot

judge wholly from the form and apparent qualities of the animal, because many of the most valuable characteristics of a breeding animal are latent and hidden. We are compelled to fall back upon what we know of the history of the individual animal, or the length of time it has been bred with care, to judge of its capability of transmitting its peculiar qualities, relying upon the knowledge we have of the general principles of breeding, that the qualities sought are inherent and well fixed in the system.

In breeding, therefore, the first important rule is to breed only from the best, but not merely the best looking, or the animal that fills the eye the most completely, but from one that has the capacity of transmitting his good qualities in the highest degree, and the strongest evidence of this is the knowledge we have of the qualities of his ancestors for several generations, unless we have some of his stock to tell as plain a story to the practised eye of a judge of cattle.

The quality of what is called a pedigree is more important than its length. It is of little use or satisfaction to trace a pedigree back through inferior or ill-bred stock, except as a warning against the animal, but the longer it is the better, provided it shows a high character in the ancestry, because the hereditary power is cumulative, and becomes stronger and more intense and fixed from generation to generation where the respective parents possess similarity of characteristics, as is commonly the case in our well established breeds. In breeding dairy stock it is of special importance to study and to know the quality of the stock from which the male has descended.

The milking qualities of the cow are not confined to any particular race or class of stock, but exist to a greater or less extent in all the well established breeds, and in cows of no known breed, like the common stock of the country, but some classes or families have been raised with greater attention to this point than others, so that high dairy qualities have become the rule in some breeds while they are the exception in others. In other words, though the secretion of milk is natural and common to all animals that suckle their young, the extraordinary development of this secretion is artificial,—the result of care and breeding. The quantity of milk which a cow is capable of secreting depends much upon the supply of blood which

passes into the mammary glands, but especially upon the activity of those glands, but the quality is governed more by the internal structure of the animal.

In subjecting the animal naturally wild, to a state of domestication so as to modify its form and system, we do it at the expense of certain qualities for the sake of attaining other qualities better calculated to promote our immediate interests. The vitality or vigor of constitution is weakened as well as the reproductive power, but the formation of fat or the tendency to produce meat, and the profitable yield of milk may be largely increased. Now as these qualities, the extraordinary development of which is due to domestication, are artificial, there is a constant tendency to revert to the natural condition, so that constant care is required to preserve what we have gained, by careful selection of individual animals from which to breed, especially to see that the male comes from a stock or family remarkable for the production of milk.

It has been found that animals that possess a strong tendency to secrete fat in the system seldom unite with it a strong tendency to secrete milk. Indeed the reverse is commonly true, and there is a marked deficiency in the formation of milk. When food is taken into the system, the first process is that of digestion, then follows the separation or preparation of nutritive parts for entering into the circulation of the blood. Individual animals differ greatly in the completeness with which this process is effected. In some there is a much greater loss of food than in others, and the completeness and economy with which this separation of the fatty elements of the food is effected varies according to the internal structure and organism of the animal itself. Perhaps it is owing in part to the fact that one animal masticates, and grinds up, and digests its food more perfectly than another.

Milk is secreted from the blood. If the blood is thin and poor and but slightly charged with the rich elements taken up in the food, the milk is of necessity poor and watery, and the quality will usually bear an intimate relation to the quantity produced. If the organization of two animals is such that they separate or eliminate the fatty elements of the food and store it away in the blood equally well, they accomplish the first step in the process of conversion of food with equal economy, and, so far as this goes, it is the same whether the subsequent use to be

made of it be to form the fat or butter in milk or the fat and tallow of the body. In other words, the economical preparation of the raw material of the food, that is digestion, and separation of the elements of nutrition, is equally important for the fat in the blood, whatever may be the ultimate form into which the animal system is to convert it. But the internal structure which accomplishes this process differs widely in different individuals. One animal will effect this elimination completely, with the least possible loss or waste of food, while another will fail to extract the fatty or nutritive elements of the food and allow them to pass off unused. It follows that animals whose structure is best formed for fattening are also best formed to fulfil the first conditions essential for the production of rich milk.

There are organs for the deposition of fat as well as for the secretion of milk. The former are called the adipose tissue, the latter the mammary glands. The object in breeding stock for the dairy is to stimulate the mammary glands to the greatest possible activity; that is, to increase their energy as compared with the other organs of secretion, and to prolong their period of activity; and they are, to such an extent, subject to hereditary influence, that great progress has already been made in increasing their power to perform their natural functions, as we see in the establishment of breeds remarkable for the production of milk, while a neglect of this point has, in some instances, so reduced the energy and activity of these glands that whole classes of animals have ceased to yield milk in quantities to be profitable upon the dairy farm.

With respect to those breeds where the tendency to produce meat has been developed, and the milking qualities overlooked or sacrificed to early maturity, no doubt we could by judicious management bring back the condition of the mammary system to a high standard of efficiency, but we should be likely, in doing it, to reduce the tendency to the economical supply of meat, or, in other words, we should impair the value of certain very important qualities which have been highly developed for specific purposes, and get only what we find already highly developed in other breeds, for, whether the two qualities are irreconcilable or incompatible in the same animal or not, they have not, as yet, been combined with any great degree of success. It is better policy, on the whole, to aim to breed for specific purposes

and to develop the highest capacity for such purposes in separate breeds.

The remaining portions of the paper were devoted to the consideration of the application of general principles to the practical details of breeding stock for the dairy, but as they elicited little discussion upon the points to which they refer, it is not thought important to present them in this connection.

Mr. JOHNSON. I would like to ask the speaker whether he prefers to have a heifer come in while in the barn, or while upon grass?

Mr. FLINT. As a matter of practice, I should prefer she should calve a little while before going out to grass. If she goes out to grass a week or a fortnight before calving, it will stimulate the mammary glands to such an extent that they often become painful to the animal, and in many cases she has to be milked before calving. It is desirable to avoid that, if possible. If she comes in two weeks before going out to grass, at the end of that time her udder will have come into its normal condition, and then there is no harm in stimulating it to its utmost capacity. But with young cows, a difficulty with the udder should be avoided, and I think it would be avoided by having them come in a little before they go out to grass.

Mr. JOHNSON. That is my own opinion.

The CHAIRMAN. Mr. Flint has opened a field for discussion which will prove interesting to the Board, and to the citizens present, and I hope it will be continued by gentlemen here who thoroughly understand the subject of cattle husbandry.

Mr. BUFFINTON. Mr. Flint spoke of milking cows before they calved, in which I have had considerable experience, and I am really undecided whether the practice is a good one or not. I would like to hear the opinion of those who have tried it. We have had more cows troubled with milk fever this last year than ever before, and we have rather laid it to milking them before they calved.

Mr. FLINT. Where a cow is turned out to grass before she calves, it sometimes becomes a matter of necessity; it would be a positive and permanent injury to the cow in some cases if she were not milked, but it is to be avoided, if it can be. I think it rather an injury to the calf, and I would rather avoid it if possible. In

doing it you see it deranges the ordinary course of nature at that time. Nature has provided a peculiar quality of milk, especially adapted to the wants of the young calf. It contains peculiar chemical properties, which are absolutely indispensable for the calf at that time. Now, if you begin to milk the cow before she calves, that order of nature is interrupted, of course; that peculiar character of the milk is to some extent modified. I think it is desirable, as I said before, to avoid it when it can be, but rather than see a cow suffer, or see her udder injured, perhaps permanently, I should certainly milk her. I should like to hear Mr. Ellsworth's experience on that point. He is a very large dairy farmer and breeder, and perhaps has more cows in milk through the year than any man here, and he must have had many cases where he has been obliged to practise one way or the other.

Mr. ELLSWORTH, of Barre. The question put by the gentleman on my right (Mr. Buffinton) was, I think, whether or not a cow should be milked before calving. Under some circumstances we are obliged to do so, but, as Mr. Flint has very properly said, it should be avoided if possible. When I have such a case come up, I immediately put the cow on a low diet. Even if it is the season of a great flow of milk, I put her in the stall half of the day; I will keep back that way if possible, and by doing so I have very many times avoided this milk fever that the gentleman speaks of. In certain cases, however, it will come up, and in such cases I put her on a low diet. I feed no corn the first ten days after calving, if the cow is in fair condition; if she is rather old, I give her oats, which are somewhat stimulating, and will increase the milk. But if she gets into a bad state, which many of our large milkers do, we are very careful not to let the calf stay upon the udder any length of time; for if you do let the calf work upon the udder when there is no milk there, as many people do, thinking (as is perfectly natural) to fetch the fever out, you will injure the quarter to which the calf sticks; he will hang to any teat he gets hold of, and that quarter will be somewhat emaciated, and it will not come back when you go to milking again. That is my experience.

There are many things about a cow, when she is coming in, if she is a good milker, that people generally do not understand. It is the most critical time to take care of a cow that I find. If

I am at home, I trust to no one to do it. She should have a dry place, any circulation of air should be avoided, for the organs are very delicate at that time; and when I manage my cows myself, I very seldom have any trouble; but when I have not been at home, I have found trouble.

Mr. BUFFINTON. Last spring, I had a case of a cow that it really seemed ought to be milked. I did not wish to do it, for I was afraid of the milk fever afterwards, which my experience had shown me was likely to follow. I gave her two doses of aconite, eight or ten drops to a dose. I happened to discover the effect of aconite in drying up the milk two years ago.

Mr. ELLSWORTH. A gentleman asks me what I do in case the udder becomes hard. I treat it very differently from the old-fashioned way. The old method used to be to apply Indian meal and cold water. I immediately apply warm soft-soap suds, with the hand, very gently, very carefully, and continue it for some time, and work over the udder until it is perfectly dry, which will be very soon if there is fever there. I repeat the application once in four hours, and I have never failed to take out the hardness.

QUESTION. Did you ever try saltpetre?

Mr. ELLSWORTH. I think I have; but I have done with everything except the treatment I have mentioned. I ruined some very nice cows in the early part of my management, but for the last few years I have been able to control it.

Mr. LORING MOODY. I think there is no subject of deeper interest or greater importance to the agriculturist than this one upon which Mr. Flint has spoken to-day, and which is now under consideration,—that is, the method of obtaining the best types of animal life; I mean, of course, those animals which serve us. But while I would do everything in my power, if I were the owner of animals or a dealer in them, to increase their physical qualities, I would endeavor also to increase their mental and moral qualities. What we want in all sorts of animals is gentleness, docility, good temper, good disposition. We can get a great deal more, and I think a great deal better meat out of our beef animals, and our mutton animals, and our pork animals, by developing in them kind and docile tempers, than we can by keeping them at arms' length from ourselves and making

them ferocious ; and so you will find that the law of kindness will have its influence upon breeding animals.

Mr. ELLSWORTH, of Barre. As Mr. Flint spoke about heifers coming in at two or three years old, I will say, that we cannot afford, I think, here in Massachusetts, at least, to wait for a heifer to come in at three years old ; we want them to come in at two years and a few months old. I agree with Mr. Flint in regard to the time of coming in. The animal should calve before she goes to grass and fills up with milk-producing food. After that we may stretch her milking capacity. I am convinced that we can teach a heifer to give milk ; I have no doubt of it at all. I generally raise what I use, say half-a-dozen a year, and I invariably use the full-blood for my males, and sort out what I call the best qualities ; so, with half-a-dozen a year, I hardly ever fail of drawing perhaps one prize, three good ones and one blank,—the blanks will come in once in a while.

But I merely rose for the purpose of saying that the time for a heifer to come in is two years old rather than at three, for it makes fifty dollars difference in the cost of the cow, and you will get a better cow by teaching her to give milk.

Mr. CONVERSE, of Palmer. I would state, in reference to this milk fever, two cases that have come under my notice within about a year. In one case a man had just bought a cow, for which he paid a hundred and fifty dollars, and he came to me and said his cow was going to die. I went to see her, and found her all in a tremble. There were one or two physicians there who said she must die. I asked him if they had bled her, and he said they had not. I said that, in Germany, the old rule was to bleed a cow with milk fever, but they all now condemned it, but if the cow must die, there would be no harm in trying it. I took his fleam and bled the cow pretty thoroughly. One teat was entirely bound up. I whittled a little pine stick down round and small, and bored out that teat. It was perfectly dry. I did it carefully, and washed the cow's bag pretty thoroughly, or, rather, his man did, with flaxseed oil. The next morning, I went to see the cow again, and bled her a second time. That cow got well, and gives milk to-day out of every teat, and is a good cow ; I don't know but as good a cow as she ever was. That was the result of that experiment.

Another man in my neighborhood had a sick cow that was similarly situated. She had just calved, and could not get up. I bled her, and, finding that her bag was swollen quite badly, rubbed her bag with oil, and she got well. We only rubbed it once I think. I attributed the cure to the bleeding. Mr. Keith, who pretends to be a cow doctor, and goes all around for ten or twelve miles, says he has practised bleeding for the past year for every cow, and has not lost one.

Mr. BOISE, of Blandford. I object to boring out the teat. I have had a good deal of experience in raising heifers and in taking care of cows, nearly the whole of my life, and I go 'round some taking care of cows when they calve, &c. I have a remedy for caked bag which I use, and use extensively. It is well known to a good many horsemen that, if they have a horse which has had the horse distemper, or has been foundered a little, they use an oil that is called skunk's oil. This oil, applied to a cow's bag, penetrates it, and takes out the fever almost immediately. But I spoiled two good cows by boring out the teats, and I don't want to spoil any more.

Mr. CONVERSE, of Palmer. Mr. Keith went to visit a heifer this fall. She was a very nice heifer, but they could not get any milk from her, and they concluded she must be spoiled. He bored out all four of the teats. They thought there was no hole in the teats. Now she is a good heifer. You could not buy her for fifty dollars.

Mr. BOISE. For the milk fever, I have used a poultice of mustard and vinegar, applied to the back. I believe the disease is something like the typhoid fever in the human system, and that either goes to the bowels, the spine, or the brain. I apply this poultice of mustard and vinegar to the spine, and right them in that way, without bleeding them at all.

Mr. GOODMAN. When such eminent doctors disagree, it is very difficult to decide in regard to the treatment of cows. I confess that I am rather a homœopathist; I don't believe in the heroic treatment, except in very extreme cases. It may be necessary, occasionally, to have the Cæsarian operation performed upon a cow, but I think as a general thing, that necessity may be avoided, by proper treatment of the animals. That is where the difficulty comes in. If our women, and our

cows also, were treated in a proper manner, if they had proper diet and proper exercise, and the other attentions that they require, parturition would not be such a difficult matter; we should have fewer diseases of women, fewer diseases of cows, better calves, and better children.

Now, as to garget, it has got to be a very common complaint, and I am not entirely certain that it is not contagious. I am not entirely certain but that, like the *epizootic apthæ*, or foot and mouth disease, it may run through a herd sometimes, and of course it would attack the cows, which are more naturally exposed to it. We very often find that it comes in a peculiar manner to our cows, sometimes running through the herd. A few years ago I had a herd of good healthy cows, not subject at all to disease, but I was unfortunate enough to buy an animal that I knew nothing about, and I found that she was full of garget; her bag was as hard, almost, as a paving stone. I paid a pretty high price for the cow, but all the advantage I derived from her was what I got in the way of the exercise she gave my man in rubbing her bag for a year. But from that cow, the garget extended all through my stables. I studied up the books pretty thoroughly, and I resorted to a cow doctor, and after hearing what he had to say, and what remedies he thought I wanted to use, I came to the conclusion I had better leave him alone. Then I applied the rubbing system, which has been mentioned by my friend from Barre (Mr. Ellsworth), and I have never had any trouble, with proper attention, in reducing the inflammation. I know there are cases where it has been neglected, where medical remedies have to be applied. There are remedies in the books, which are complicated, and require a good deal of skill in administering them, but they must sometimes be resorted to. As a general thing, however, I think we shall do better by rubbing them with warm water and milk; I use that a good deal; but after all, it is the hand working that does the business. There is a doctor in New York who has effected some wonderful cures in this way. It is a pretty well established fact, that he has restored the eyesight and hearing of people by hand rubbing. There is no doubt that the great virtue of this method is the constant irritation of the skin, and in the exercise that the muscles get in this way, bringing them round into a sound condition.

There is another point in connection with this matter to which I will refer for a moment. I think that animals, as well as men, are fed too often. That is, we eat too many times a day. There are exceptional cases; you cannot lay down a universal rule. A man who gets up at four o'clock in the morning and goes to work, of course needs three meals, because he has a long day; but take an ordinary Christian, who gets up in the morning at a decent hour, does his work faithfully, and goes to bed at the proper time, he will get along very comfortably with two meals a day; if he does not work any harder than a great many of the farmers in this State, he will do very well with two meals a day. The man who gets his breakfast at eight o'clock, and has a good digestion, if he will take his second meal at two or three o'clock, and not eat anything after that, and go to bed at a reasonable hour, will be a better man, will have a better temper, and his family will be happier, than if he eats three meals a day. It is the third meal that does the business, but we cannot get along without it, we think, in Yankee land.

In the old country, where they live upon solid food, and do not poison themselves with coffee and pastry, and rarely taste of sweet things, they have sweet tempers. But you know, that if you go among country people, they are so hospitable that they will give you for supper hot biscuit, half a dozen kinds of cake, a great many kinds of sweetmeats, some tongue, a little cold pork, and very strong tea and coffee. No man can go to bed on a supper like that, and wake up the next morning feeling comfortable and at peace with himself and all the rest of mankind. That is the sort of philosophy we ought to practise towards our animals. Up in Worcester County, where they are devoted to three meals a day, there are a great many farmers who feed their animals four or five times a day; but I found in some of the dairy sections of New York, where they have as good farmers as there are in Worcester County or anywhere else, they were in the habit of feeding their cows but twice a day. It looked to me at the time as rather preposterous, but I tried it all last winter upon my horses, and for two winters past I have tried it upon my cows, and I have not seen but that they got along just as comfortably, and they have eaten up their hay and meal cleaner, and have not eaten quite as much as when I fed them three meals a day.

My case is a little exceptional. My animals are breeding animals. I do not expect to get very much profit in the way of milk or butter. If I were running my cows for milk or butter, as a great many farmers do, and wanted to produce a large quantity of milk, I should perhaps feed them oftener and give them more; but, taking cows as they are ordinarily kept, we get through with them about November or December, and then the only point is to take care of them until they come in in the spring, and I think they would do just as well if they had but two meals a day,—giving them regularly what they want, and letting them lie quiet the rest of the time. Then, if we are careful about keeping them clean, and feeding them regularly, not over-feeding, I do not believe we shall have any trouble from garget.

I apprehend that whatever may be said of the influence of this Board, in other directions,—and it has been very extensive in many ways,—it will be admitted that its efforts for the improvement of the bovine species have been eminently successful. If there is one thing that can be pointed to as having vindicated the wisdom of those men who are called scientific farmers, it is the increased care which, during the last fifteen years, has been bestowed on the stock of the State. Any man who has paid any attention to that subject, who will look back during that period, will recollect that there were but very few parts of the State where he could find thoroughbred animals. Our ancestors may have had as good stock as was ever put upon any country,—our native stock, a conglomeration of all the breeds of Europe. Yet by want of proper care and proper feeding and attention, and, above all, by the use of what were called scrub bulls, we had so reduced the quality of our stock, that it had become decidedly inferior. But some gentlemen took hold of that matter, and imported thoroughbred male animals, and from that time to this, our stock has been steadily improving in quality; and although it is said statistics show that the number of animals is not so large as it was some years ago, yet that reduction in quantity is made up by the improvement in quality; we have such far superior animals that we do not want so many of them. Farmers in my region, who formerly found it necessary to keep a dozen or fifteen animals for the production of the milk and butter they wanted, now get along with seven or

eight, which, through their superior quality, and through the better attention that is paid to them, will produce as much as a dozen formerly did. And this State Board have gone so far, in obedience to the wishes, I am happy to say, of a majority of the farmers of this Commonwealth, as to pass a resolution last year, that hereafter no society sending a delegate shall give a premium to a bull that is not pure bred. Some farmers complain of this; but they are not prevented from raising a scrub bull and using it for beef, if they please. All that is said is, that those animals shall not be brought up and receive premiums equal to a thoroughbred, and for this reason: because every one knows that according to the laws of breeding, which have been laid down by Mr. Flint, and other gentlemen who have investigated this subject, a thoroughbred animal will produce a good progeny, while the stock of one which is not a thoroughbred, although you might get at first a good-looking animal, will run out, if you continue to use him. Therefore, I think it is the unanimous wish of all the farmers of this Commonwealth, who understand this subject, that we shall only give prizes to thoroughbred bulls.

Now, farmers are disposed, sometimes, to doubt on this point, and they say it is no object to look back to the pedigree of an animal, but they do not doubt when they look at the human family. Does not every man expect to find the likeness of father or mother in the child? Why, a man would have doubts about the paternity of his child if he did not see in him some likeness to himself. Do you find any old family in the world that has not stamped its features, in some shape, upon its descendants? Take the case of Henry the Eighth of England—a man of the strongest and most vigorous powers—a man who first married a woman like himself in character, Catherine of Arragon, whom he afterwards divorced. The result of that union—because “like produces like”—was the woman called “Bloody Mary.” She inherited the strong qualities of her father, and she inherited the pertinacity of her mother. The result was, that notwithstanding all the adversities through which she passed, and all the humiliations to which she was subjected, she came out, when she was queen, just the same character that was to be expected from her pa-

rentage. After his divorce, the king married Anne Boleyn, and the fruit of that union was Queen Elizabeth, who exhibited the characters of both parents—the strong father, the weak mother. She was, in some points, one of the strongest persons that ever sat upon a throne; there came out, whenever occasion required it, the great character of the father, and she was equal to every emergency. But until that emergency arose, she had the weakness of her mother, and allowed herself to be toadied and flattered, and showed herself, what she really was in those moments, a weak woman. So you may take any of the reigning families of Europe, and you will see among them all the peculiarities of their ancestors, so marked that they could not fail to be distinguished by anybody who investigated the subject.

Now, we cannot ignore these same laws in relation to our stock. We cannot say that the best pure-blood bull does not perpetuate in his descendants his characteristics, either for good or evil. It is impossible for an animal that has not good qualities to give to its descendants characteristics which it has not. Therefore, as Mr. Flint has shown us, it is important that we should have, in a bull particularly, strongly-marked characteristics, because he gives to his progeny, through successive generations, his character, while the female only gives it to her immediate descendants. But I think Mr. Flint will agree with me, and all breeders, that it is better to have the very best cow you can get, and the best bull to match the cow, if you want the best stock. The only way, therefore, to bring up our stock, is as the best farmers are bringing them up. If we do not have thoroughbred stock on both sides, as is not necessary in the ordinary business of a farmer, we must make a selection of our best cows, and put them to the best thoroughbred bull we can find, and follow that up with the progeny. It is not a certain thing, because you have a first-rate cow, apparently, and a thoroughbred bull, that you will get a first-rate calf, because there are so many chances that a bad trait or a chance peculiarity will come out in the progeny, just as some peculiarity will appear in the children of a family for three or four generations. But if you continue this system, getting rid of your bad animals, if you have them, and taking the best to

breed from to keep up your stock, you will in time have the animals you ought to have.

The great trouble is, we do not give these matters the consideration and study we should. We come here and listen to these lectures and discussions, we get pretty full of them, we enjoy them, and then we go home, and when the reports come, we do not study them as we ought to do. Take that lecture of Dr. Nichols, or the one to which we have just listened by Mr. Flint,—it was pleasant to hear them, and we think we know all about them; but every sentence is just as full of meat as a chestnut is of its kernel, and a man needs to take these reports and study them out for himself, and think them out. That is the only way in which he can get all the benefit of these meetings. What we hear here comes in one ear and goes out at the other, except some few things that appertain to our particular calling; but these reports contain a mine of information and learning, and if, when we get them, instead of putting them on the shelves, to see how nice and clean the books look, we will take them up and read them, we shall be the wiser for it, and the men who come here in after years will be able to go forward to new fields of study and investigation.

Mr. WETHERELL, of Boston, referred to the fact that the average yield of cheese per cow in this Commonwealth appeared, from the reports of the cheese factories, to be not more than 350 pounds, while in Herkimer County, N. Y., he had been assured by a dairyman of long experience, that he had cows that would produce 800 pounds of cheese. He thought the amount of milk per cow would not average over 500 gallons, and the amount of butter not more than 150 pounds. He argued from these facts the importance of paying more attention to the raising of good cows.

Mr. ELLSWORTH, of Barre, said that the cheese factories in his section of the State did not run more than five months in a year, and some of them only three. Their cows produced a large amount of milk after the factories stopped. Some of the farmers made butter, some sent their milk to the condensing factory, and others sent it to Boston, so that the reports of the cheese factories afforded no data whatever by which to arrive at the production of milk in that county.

The CHAIRMAN. This subject of breeding is one of the very highest importance. You remember that a great deal of excitement was created, a few years ago, when Mr. Campbell, of Vermont, went to the World's Fair with his sheep and took the first premium. It appeared, on subsequent inquiry, that it was but the imported blood of ten years previous that had gone back to Europe in competition with the French Merinos, the first in the world. It was the result of that careful breeding and feeding which have been referred to here.

Mr. HUBBARD, of Brimfield. With regard to the improvement of stock, I think there is no person who has travelled over the State and visited the various agricultural societies, who will not say at once that the stock in Massachusetts has been improved over what it was in former years. Now the question comes, "In what manner has it been improved?" We all say, "By the introduction of thoroughbred stock."

One word with regard to the milk and cheese produced in Massachusetts. I have about as much to do as any one with making up the reports to which reference has been made, and if we take the statements of those reports, we do not get a fair statement of the products of the cows of this State. There are some dairies which carry milk to the factory only during the excessively hot weather of July and August, and sometimes only from the middle of July until the first of September; but those cows are included in the number of cows on which the calculation is made, bringing the average per cow down lower than it would otherwise be. Then most people feed their calves, which are worth from five to twenty-five dollars, which is a large item to be added to the income of a cow.

Now, none of the factories very near me have run, for the last two years, more than three or four months a year. The dairies, in that section, previous to the factories' starting, are making butter and selling milk. The factory with which I am connected, started about the first of April this year. Previous to the first of April, the calves from the cows of the dairies were feeding, and the milk before that time was used in the manufacture of butter. The factory (and mine is only a sample of others) closed its operations in making cheese in October, and from that time forth, the milk in that section was carried to the condensing factory in West Brookfield. There is a large item of

income that comes from the dairies after they are through with making cheese. Then, again, there is a milk car that runs through to Boston, on the Boston and Albany road, and, for several months after we get through making cheese, a good deal of milk is sent to the Boston market. Now to get at the real profit of our cows, we must take the entire income, not merely what we receive in a short time.

Adjourned to half-past one o'clock.

AFTERNOON SESSION.

On the reassembling of the Convention, the Chair stated that the subject for discussion was

FRUIT CULTURE,

which was opened by J. F. C. HYDE, of Newton. He said:—

The subject presented for discussion at this time is old and familiar and yet always an interesting one. It may be asked, what we have to offer that is new. Possibly not much, but we believe that good always comes from the free discussion of 'most any subject. What we have to say on this occasion will have particular reference to fruit-growing in our own State. The time was when some fruits were grown more easily than they now are. Our climate seems to have changed in some respects, rendering successful fruit-growing more difficult, while we have many more insect enemies to contend with, so that the chances of success are not so good as formerly. Apples could once be grown with as much ease and certainty as potatoes or Indian corn, while the crop is now considered somewhat uncertain, and by many as unprofitable.

No fruit grown in our climate enters so largely into our cookery, or is more highly esteemed for all purposes than this, and we feel that we cannot possibly do without it, but we shall certainly be obliged to do so if we depend solely on the crop produced within our own limits. Is the limited supply due wholly to the seasons, or is it true proper attention has not been given to the selection of varieties that would bear the odd years when the Baldwin does not, or to the neglect to plant apple-trees, and to take care of those already planted, or all these causes combined?

All through this State the Baldwin apple has been planted to the exclusion of better and annually producing sorts. During a bearing year, which is the even year, there are as many apples, and perhaps more than are wanted to supply the market, and the prices are consequently low,—too low the grower will say, and barrels to put them in too high in price,—so by the time the fruit is sold and all expenses paid, little real profit remains.

At just what price good apples grown in Massachusetts, properly picked and packed can be put down in our large cities so as to pay a fair profit to the grower we cannot exactly tell, but think it should not be placed below two and a half dollars, and possibly three dollars would not be considered too high a figure. They average the latter price, if not more, taking ten years together, for good apples never sell below one dollar and a half, and some seasons sell for four and a half to six dollars per barrel. We are told by some that apples cannot be raised at all here, but this we think is a mistake, for we have never known a season when some varieties did not give a fair crop in some localities.

Others say they certainly cannot be raised where land is worth several hundred dollars per acre, and to this we are agreed, and we would not advise the planting of apple-trees on valuable land near cities and large towns, when the same can be profitably employed for market gardening.

New York, Michigan and other States west of us yearly take from our pockets large sums of money that might just as well remain at home.

There are tens of thousands of acres of land eminently adapted to profitable apple culture that now are used as pasture or woodland. Who will say the hills of old Berkshire will not yield just as good apples as can be raised across the line that divides us from New York? Who will deny that there are many acres of land that are not worth more than ten, twenty or possibly fifty dollars per acre for any other purpose that could be profitably employed in raising apples? We fully believe if the farmers of our State would take good care in the selection of a site and of trees of good varieties for their orchards, and then take as good care of them after they are set as they do of other crops, there would be no complaint that the apple crop had ceased to be a profitable one. With the

constantly improving facilities for getting the fruit to market, even from the more distant parts of the State, let the farmer take courage and plant apple-trees even though he may not live to gather the harvests. Such orchards judiciously planted, and in such locations as we have suggested well cared for, we believe will prove a profitable investment in spite of all the obstacles that lie in the way. We have enemies to contend with, plant what crop we will.

We cannot be sure of perfect success in any department. We wish to remark, as we leave this branch of the subject, that more care should be exercised in the selection of varieties, so that the crop will be more uniform, and thus if possible avoid extreme prices. As we remember the many acres of land from which the wood has been stripped and that are now comparatively unproductive, let us hope these may be covered with flourishing orchards of apple-trees, whose boughs shall bend beneath their load of red and golden fruit.

PEAR CULTURE.

On the subject of pear culture we have little to offer. A great many trees have been planted during the past twenty years that are now coming into bearing, and the markets are likely to be well supplied with this excellent fruit. After long experience and careful observation we are led to believe that a pear orchard planted on suitable land and well cared for will prove a fair investment. The money will pay for a term of years—say thirty to fifty, the life-time of the trees—seven to ten per centum.

Once we thought pear culture even more profitable. Only the very best fruit brings a high price, and the very poor is wholly lost, as poor pears are not salable. We would not discourage the planting of pear-trees. Let every owner of a garden plant for his own use, if no more. If one has a soil or location or both peculiarly adapted to this fruit and can afford to wait, then plant pear-trees.

In planting orchards we do not advise the setting of many varieties; six to ten is all any person should set who intends to grow them for profit, and leave the planting of hundreds of varieties to pomologists, who wish to try all that are originated.

Several things are to be considered in the selection of varieties. One may raise those for home use that he would not grow for the market. Size, color, productiveness, quality, vigor and health of tree, are among the points to be considered in the making up of a list.

The pear-tree needs and must have higher culture and more care than the apple-tree, and especially those grown on quince stocks, the latter a class of trees we do not highly esteem. As this fruit is not used very much for cooking it is not so universally esteemed as the apple. We believe that our people make a mistake in not cooking the pear more generally, and so make use of even those specimens that will not bring the highest price in the market.

The pear-tree seems to have fewer insect enemies than the apple, though we cannot tell what time may develop. We still think pear culture should be encouraged.

We leave this subject, and briefly refer to that most luscious fruit, the peach. The peach in our boyhood days seldom failed, but within a few years has proved very uncertain. The trees under the management they have received have proved to be very short lived. This difficulty can be overcome in a great degree by the selection of pits from the best and most hardy varieties, and by growing the trees slowly and thus securing well ripened wood and greater duration.

The peach deserves more attention than it is now receiving in our State.

The cherry has not been regarded as a profitable fruit for several years, though when it is obtained it brings good prices. We cannot advise the planting of large orchards of this fruit.

The plum, never so healthful a fruit as some others, has ceased to be profitable, owing to warts and curculios, and very little attention is now bestowed upon it.

We pass to a brief consideration of the small fruits. Until within a year or two we have always advocated the extensive planting of the currant, both for home use and the market. The fruit is always agreeable, and finds a ready sale at fair prices. A formidable insect enemy has appeared, however, which will greatly discourage the growers of this healthful fruit. It was hoped that before this some effectual preventive of the ravages of the currant worm would be discovered. Powdered

hellebore, carbonate of lime, air-slacked lime and other substances have been used with considerable success, but still the detested worm continues its ravages to a great extent. We still hope and believe that this insect, like the equally detested canker-worm, will disappear soon and forever, and would advise the planting of currants. The only way we see is to keep on planting and fighting all enemies to the best of our ability.

Gooseberries have not been largely grown in our State, for the demand has never been very large. Our people seldom eat ripe gooseberries and the sale of green fruit is rather limited. We cannot advise the extensive planting of this fruit for profit.

The raspberry is an excellent fruit, that is highly appreciated by some and almost wholly neglected by others, and on the whole, does not we think receive the attention it deserves. It is true it is not of high flavor generally, but yet is a very pleasant fruit, and comes along at a good time, soon after the strawberry disappears. At the prices this fruit has sold for a few years past in Boston market, it must be a profitable crop. Good judgment should be exercised in the selection of a soil for this fruit, and it should have just the proper management in order to secure the best results. A mistake has been made by some in attempting to grow this fruit for too many years on the same spot. The plantation should be changed about once in four or five years; a moist rich soil is best adapted to the raspberry.

The blackberry is a most delicious and wholesome fruit, but difficult to grow. The plants are bad to cultivate among because of the thorns. They often winter kill, and the crop is by no means certain. We think there is little money in the blackberry. Let them be grown to some extent in gardens for home consumption, where they can be trained and well cared for.

What shall we say of grape culture?

After years of experience we say just as we have said of pear culture. Under favorable circumstances the crop is a profitable one. There are many choice locations, even in our State, where the grape could be made to flourish, and where a high degree of success could be attained. At how low a price per pound grapes can be grown and yet pay a profit we are not quite sure, though we venture to suggest the price of six cents, and that is a little lower than this fruit is generally sold. This year may possibly have been an exception. Sheltered hillsides with a

well drained and rather dry soil would be favorable to success. For a single variety to raise for the market we have found nothing to equal the Concord, though it is not a fruit of the highest quality.

Grapes require but little care and may be grown in the open field like hops, where nearly all the work of keeping the ground clean can be done by horse power. We have had uniformly good success in producing and ripening a crop, and regard grapes as more certain than most of the fruit crops.

We do not believe in the excessive pruning of our native rampant growers, that some have advocated. Those who will take the trouble to experiment in this direction will soon become satisfied that it is better to leave more wood. The demand for this fruit is increasing, and immense quantities are yearly placed in our markets from the West, so that were we not to raise a pound there would still be a good supply. Growers here have one advantage over their more distant neighbors, that of saving freight and possibly a commission. We still advise all who have a square rod of land to raise a few grapes for home consumption, and those who have choice locations peculiarly well adapted to this fruit, to plant largely of the Concord for the market.

We now come to speak of strawberries, one of the most profitable fruits grown. It may be safely said that the market is never glutted with good strawberries and probably never will be. They are such a universal favorite with all that they are all consumed, and at prices that afford a handsome margin of profit to the grower. This fruit requires a rich soil, plenty of manure and the best culture to yield the best results. It should be the object of every fruit raiser to produce superior fruit. Such will always find a ready sale at good prices. The soil should never be a very dry one, while a wet soil should be even more carefully avoided. The location should be such that no water will stand upon the bed during the winter, for it is almost sure to kill out the plants. Plants should be set in April or early in May; the earlier the better after the ground is in good condition. They may be grown in hills with good results, but we much prefer for a general crop to have them in beds. The plan adopted by our friends in Concord, which partakes of both hill and bed culture, is no doubt a good one. Some varieties make too

many runners, and the foliage is so dense as to seriously injure the crop.

If grown thinly they need to be mulched to keep the fruit clean. Chopped hay, straw or pine leaves are excellent for this purpose. The Belmont growers in years past have raised this fruit in great perfection in beds, and after securing one crop ploughed the plant under. This will do very well if the ground be weedy, but if not, the leaves should be mown off soon after the crop has matured, and the plants will come up with new life and vigor and give a large yield of fruit the next year. From a limited experience we are very much pleased with this mode of treatment. We hope to continue to hear favorable reports from our friend Moore of Concord, who has adopted a somewhat peculiar treatment of the strawberry, but which, among other peculiarities, embraces the mowing off of the plants. If we were to judge of his system by the fine specimens of fruit shown at the rooms of the Massachusetts Horticultural Society the past season, we should need no word of explanation or argument to prove its entire success.

Fruit should be sent to market in all cases with the hulls on, and if possible in baskets that furnish ventilation. He who grows for profit will select such varieties, without regard to quality for the table, as will give the largest number of quarts of fruit,—the Wilson, for instance. Size is an important quality in a strawberry, for everything else being equal the large fruit will always command a better price than the small. The fruit for market should not be left on until fully ripe, as it becomes too soft for transportation. For home use a very different selection of varieties should be made, and the fruit should be allowed to ripen well before picking. Weeds must be kept down, and it is almost useless to attempt to grow this crop unless clean culture is insisted upon. The plants should be covered on the approach of winter. Generally coarse horse manure is used for this purpose, but hay and even branches of evergreens answer a good purpose.

We would strongly encourage the more extensive cultivation of this most excellent fruit, believing that the demand will be even greater than the supply. The strawberry has fewer insect enemies than most other fruits, is as sure to give a crop as any,

is light and easy of transportation, with a sure and ready sale at fair prices. No more if so much can be said of other fruits.

We close by remarking that all things considered, we regard fruit growing as a profitable and pleasant branch of horticulture.

Mr. SLADE. What is the object of covering up strawberries?

Mr. HYDE. The object is to prevent them from freezing and thawing and being injured. No man knows better than yourself that it is not extreme cold that kills many things in our climate; it is the alternate freezing and thawing. For instance: I saw an English ivy here in town, which, wherever it is sheltered from the sun, stands very well; but wherever the sun strikes it, it scorches it like fire. It is not the heat: it is the freezing and thawing. This applies to the peach, to the althea and many other things. Whenever my strawberries have been left uncovered, they have presented a half-killed appearance; when they are properly covered, they come out as fresh and green as when the covering was put on them. And you will notice another thing: when there is a thaw in winter, you find that the ground under this protection, if the beds are properly covered, is perfectly frozen, while if you step anywhere else you may get into mud an inch or two deep: showing that the covering protects your strawberries from these alternations of heat and cold and keeps them in better condition.

QUESTION. Is there any remedy for that blight of the Wilson which prevails in your vicinity?

Mr. HYDE. That is a very singular trouble which affects the Wilson. We must have a better variety. I think our friend Moore has a seedling which will prove to be better. I hope he has. The Wilson is somewhat capricious. It works in this way: sometimes it will spread all over the ground and make more growth than you want and present none of that appearance to which I have referred. At other times it will stand still; throw off little offshoots, perhaps, and send out a runner or two, and remain in that way, and this blight will come out in spots over the leaves; and where that prevails to any considerable extent the crop will be pretty much a failure. I do not know of any remedy. I have seen it in Belmont, where the Wilson has received the very best cultivation, and I have seen

it in other places. I cannot account for it, and so far as I know there is no remedy for it.

QUESTION. At what time does it come on?

Mr. HYDE. It usually comes on before the ripening of the fruit and remains during the season. I have not noticed it particularly after the fruit is taken off, because the bed begins to grow brown after the fruit is taken off, any way.

Mulching is beneficial to all kinds of fruit, if you can afford it. I once mulched a pear orchard with meadow hay; it was somewhat expensive, but I have no doubt it was a good thing for the orchard. But there is one objection. Some object to shutting out the light and heat. That is the only objection I see to mulching. I do not think we can get such good pears or apples, in flavor, where the ground is covered. I do not think we can get our crop so forward where the trees are mulched in that way as where the sun's rays are allowed to strike upon the ground. But on dry soil that effect would not be seen so much as on more moist soil.

I believe in mulching strawberries for another reason: it will have a tendency to keep them clean. It is very disagreeable, after a rain, to find the berries ripe but with dirt scattered all over them. Pine leaves make a first-rate mulch. Cheap hay, straw, or anything of that kind answers a very excellent purpose. I would not use sawdust, nor would I recommend the use of tan. It brings with it a great many insects and causes the growth of fungi among the beds. I would recommend leaves of any kind. Some may ask the question why I do not cover with leaves. You are aware that in winter time it often happens that there is no snow on the ground, and then the high winds blow the leaves off; but something might be used to keep them down. I usually mulch just about the time the plants come into bloom; sometimes a little later, though I should prefer to do it before.

QUESTION. What is the best manure for the crop?

Mr. HYDE. I am free to answer that question. I am a great believer in well composted stable manure. I apply it to the extent of three or four hundred dollars to the acre. The heaviest application of manure I ever knew to be made was six hundred dollars' worth to the acre. The income from that acre was a little over a thousand dollars, after deducting com-

missions. There was a profit of \$400 to cover merely the labor of picking and sending to market. That is pretty heavy manuring with manure at ten dollars a cord ; but I believe in heavy manuring, as you can judge when I tell you that I put on my garden, where I raise potatoes and market stuff, twenty-five cords of stable manure to the acre. Some of my neighbors object to this heavy manuring. One man was cultivating three or four acres of strawberries and getting about half a crop. I said to him "Why don't you cultivate one acre and do it well?" He said, "What do you mean?" I replied, "Go to Belmont, where they get eight hundred, ten hundred, twelve hundred dollars from an acre, and they will tell you how to raise strawberries." He went there and became convinced that his shilly-shally mode did not pay.

In order to raise strawberries to a profit they should be highly manured. It is almost impossible to manure too highly for strawberries. That is, I would put in about all the manure I could, and mix it sufficiently with the soil, to have my plants thrive. It won't answer to put your plant into clear manure, of course, but you want to put as much into the ground as it will hold. Farmers understand how that is. I have had good success with wood ashes, but they are very difficult to get. I have used guano lately.

QUESTION. How would you apply wood ashes?

Mr. HYDE. I would work them into the soil as I would horse-manure, and the next spring spread them on the surface, just as we apply guano. We use guano in the spring,—spread it over the beds; and it gives a healthy, dark appearance to the leaves, and I have no doubt it is a good thing to use. I have never been able to get unleached ashes enough to use in sufficient quantity to determine the best quantity per acre, but I can say as to guano. I apply a liberal dressing: I should think four or five hundred pounds to the acre. I do not rely upon that, but use it as an auxiliary. Having used my stable manure I use that to help start up my strawberries in the spring.

I have not found the best results from superphosphates, for the reason that I have not a great deal of confidence in commercial superphosphates. I think a great many of them are frauds. Right here let me say that I have used the superphosphate that Dr. Nichols spoke of yesterday. I don't want to

call names, for I don't wish to injure anybody ; but I used that superphosphate, after as careful an examination as I could give it without analysis, side by side with horse-manure, to ascertain the results from so many dollars' worth of this superphosphate and so many dollars' worth of stable manure. It is sold for thirty or thirty-two dollars a ton, and I am free to say that I regard it as very dear manure for any crop. I should only use it when I could not get stable-manure.

QUESTION. How often do you put on the amount of manure you spoke of—twenty-five cords ?

Mr. HYDE. Only once. For instance: we prepare our ground in the spring and the manure is applied. Of course the first year the plants cover the ground, and the next year we get a fine crop. When the second crop is off, about the first week in July, we turn them all over and put in another crop. We do not use that land again for strawberries for three or four years, because, with strawberries as with other crops, we must have rotation ; and they do not do as well on the same soil again immediately.

As to apples, you know how Mr. Clapp of Dorchester has raised them in great abundance in a region perfectly infested with canker-worms. He has raised twelve hundred dollars worth of Gravenstein apples when all around him there was not an apple left. How did he do it? He put around his trees wooden troughs that he had made. He had one set that lasted ten years. They are wooden troughs cut out like a gutter, put around the tree and then a little roof put over it, the interstices being filled with oyster-shell lime or something of that kind, packed down firmly. Into these troughs he put crude petroleum. That had to be renewed once in a while, and once in a while the canker-worms were so numerous as to bridge it over, and a few might get on to the tree ; but while everybody's trees in Dorchester (now Boston) were so infested by canker-worms that every green leaf was destroyed, his orchard has remained green and flourishing, and he has raised fruit right along. It is true, it is considerable trouble to do this, but it pays abundantly. Another man has preserved his orchard by the use of printer's ink, which is better than tar. His way of doing it is to put a strip of tarred paper around his trees (canvas would answer a better purpose), and over that spread

printer's ink. The only thing to be guarded against is that, unless you are very watchful, they will sometimes bridge the strip of paper and a few will get over. But if you are careful (and of course vigilance here, as elsewhere, is the price of safety), you may protect your trees in this way. You must look out that they do not get over in any large numbers. Apples can be grown in large quantities, in spite of canker-worms and all these other insects.

Mr. MOORE. I will endeavor not to occupy much of your time, and will simply talk a few moments about some of the fruits.

I have been growing grapes for quite a number of years. I have now five acres. I find no difficulty in growing them. Of course, you must comply with the conditions named by friend Hyde. First, you must have a good soil and a good location. The soil to grow grapes in Massachusetts should be, of the two, rather light. That is, the grape wants a warm soil, and heavy soils are not generally warm. A southerly or south-easterly exposure is probably the best. Select a slight slope, where no water will stand, and where you will get more heat from the rays of the sun. In such a location as that, there cannot be any difficulty in growing grapes in Massachusetts; certainly, I do not have any trouble upon my land. I regard it as the surest crop of all the large fruits,—calling the berries the smaller fruits. The grape is less troubled by insects than any other crop. The principal trouble you will have from insects will be from the rose-bug. That pest you can get under after a little while, by picking them off. They come into my field from the west side usually, with a warm wind. I generally pick them off of the first row, and they will trouble me for about a week. Years ago, I would pick off a bushel of them, but now I have got them under, so that I do not have much trouble with them.

Now, in regard to the planting and cultivation. The grape does not, in Massachusetts—the strong growing kinds at least—require a very rich soil. A soil that is sufficiently rich to grow forty bushels of corn to the acre, is rich enough to grow grapes like the Concord, the Diana, the Hartford, and the Rogers,—the Rogers being even a stronger grower than most of the other kinds. I have found it impossible to grow the Diana

upon rich soil ; it made so much wood that it does not mature ; even if I laid it down, it would not fruit ; whereas, upon poor soil, I have no difficulty.

I plant my vines ten feet apart one way, and seven feet the other. The reason why I do not have them the same distance apart each way is, that I may go through one way with a horse and cart, if I see fit. I do not think it is desirable, here in Massachusetts, to plough exceedingly deep. I am satisfied that ploughing fifteen or eighteen inches deep makes the crop later. I may be wrong about it, but I think I am correct there.

In regard to pruning, any system, no matter what it is, or no system, that will keep your trellis or your poles on which the vines grow, full of short-jointed, well-ripened wood, will give you a crop ; and no matter how they are handled, you will get two or three crops. The difficulty comes after you have taken off three or four crops of grapes. Then, when the wood has become old and a little crabbed, and runs into a good many shoots, you will find more difficulty, if you do not exercise a little more judgment than perhaps some use. You will want to cut out some of that old wood, and get new wood in its place. New wood, short-jointed, well-developed buds, will give you a good crop. Your next year's crop depends upon the wood you grow this year.

Perhaps I need not say anything more about grapes, unless it may be about varieties. I buy every new thing that comes up, and get humbugged generally ; but then, I rather enjoy it. I have found the Concord almost the only grape that pays me a profit ; perhaps I ought to mention also the Hartford. I realized from a very small piece of Hartfords that I had this year, which came earlier than the others, more profit than I did from my Concords, getting about fourteen cents a pound for two tons which I had. Now, we do not have to take the trouble with our grapes at Concord that the western folks do. We take our bushel boxes into the field, pack them full of grapes, load them into the wagon in the field, send them to Boston, and sell them by the box for what we can get ; we do not have to pay anything to the commission merchant, but take all the money there is in it, weighing the boxes before they are put up, and changing boxes with the buyers. This makes a very simple thing of it, and one quite readily done.

Perhaps you may think I state it rather strongly, but I believe I can raise a bushel of grapes as cheaply as I can a bushel of potatoes: I have no doubt about it. In the first place, it is no drain upon the farm for manure, after the first start. I have two acres back of my house on the hill, which some gentlemen here have seen, which was an old pine plain when I was a boy. Ten years ago, the land would not have brought ten dollars an acre, after the wood was off, and it had run up to birches and a few sapling pines. I cut off the trees and planted that piece with grapes, without the addition, mind you, of any manure at all. I have never put any manure there since, and yet I get all the growth I want. I would not have you understand by that that it is not necessary to manure grapes: I think it is often necessary to do it; but while I can grow all the wood I want, why should I manure? I cannot see any reason. When I begin to see the want of manure, then I am going to put it there; but while I can grow all the wood I want, and get all the fruit I want off of those vines, why should I put manure on? I might perhaps say further, that I have grown grapes to some extent, simply for the reason that they do not require manure. It is a constant drain upon the rest of the farm to raise any fruit that needs manure. As to the quantity of grapes which may be raised to the acre, I should say, without stating it high, that the grape runs all the way from two to five tons to the acre. I have seen at the rate of nearly ten tons to the acre raised, but from two to five tons I think would be reckoned a fair crop.

QUESTION. What will they be worth?

MR. MOORE. You might just as well ask me what potatoes will be worth next year. It is a hard question to answer. This year, the price has been lower than ever before, and that not because of a surplus of grapes, but from the fact that there were spoiled grapes in some locations, and those spoiled grapes were put into the market, and the market broke down. Every farmer knows that if the market once breaks down, it is pretty hard to get it up again that year; and more so with grapes than potatoes, because grapes are considered a luxury: buyers will continue to buy if they get good fruit, but let them get poor fruit, and they drop off, and the demand lessens. I have averaged seven or eight cents a pound—that is all. But

grapes can be raised for three cents a pound, and pay better than any crop you raise down here. Three cents a pound is a dollar and a half a bushel, and I think grapes can be grown as cheaply as potatoes; they certainly can with me.

Now, perhaps I have said enough about grapes, and as I shall be able to speak but a little while longer, I will say a few words in regard to strawberries.

I am growing strawberries quite extensively, and I regard them as a profitable crop, when properly managed. Without any particular preliminaries, I will say, that my usual method of planting is to plant them in rows, four feet apart, and twelve or fourteen inches apart in the rows. Whatever way I want to grow them, I make up my mind to have them in straight lines. If I am going to make a bed which is to remain three years, as it would be necessary to do with the *Triomphe de Gand*, the *Agriculturist*, or the *Jucunda*, for the reason that none of these large varieties can be grown to a full crop under what is called the matted-bed or Belmont system, it is the best way, because in single rows, with the runners cut off, they can be made to produce good crops.

The greatest success that I have realized in growing strawberries, has been from mowing off the tops. You will think that is a pretty rough operation, but I will venture to say that not once in twenty times can a man grow a second crop of strawberries, with any success, particularly under the matted-bed system, without mowing the tops. Immediately after you have taken of the crop, don't wait, but mow them all over. Don't have any nonsense about it, but mow them right down close to the ground, and then rake the leaves off clean. Suppose you are going to keep your bed over, it will not be half the work to weed that bed after it is mown, that it would have been if you had not mown it. Then with a horse and a small-sized plough, go through the paths and turn two small furrows together—in all a strip from thirteen to fifteen inches wide; then with a Hexamer-prong hoe level the furrows and gather any rubbish in small heaps, after which the bed should be loosened with a small-pronged hoe, and any white clover or grass rooted up. By doing this it will be much less work to finish the weeding, which should be done at once, and you will be astonished to see what a handsome bed of strawberries you

will have in a few weeks. I persuaded my friend Hyde to try the experiment, and I believe I heard him state at the Horticultural Rooms that he raised the best crop he ever grew.

In the discussions that we have had at the Horticultural Rooms, Prof. Russell asked his opinion of this practice of mowing the tops, by Mr. Strong. Well, the professor, who is very strong in his opinions, said, "In the first place, it is contrary to common sense, and contrary to nature. It is all wrong, there is no doubt about it; and don't any of you try it." That was pretty strong language, but I thought I would wait and see how he would come out before we got through. He said it wasn't scientific: that is another term used. In the discussion afterwards, I said simply this: that I had tried it for a series of years; it was not a theory, it was a fact; and the answer to his assertion that it was not scientific was this: "It is a fact, and if it does not accord with your science, I rather think your science has got the worst of it." Then I took the ground that it was scientific, and although I am not a scientific man, and do not pretend to be anything of the kind, I undertook to prove it in this way: first, that when fruit trees and plants have perfected their fruit, their leaves have performed their functions. Take the apple, the peach, or almost any other tree, the leaves fall before you get another crop of fruit. They have elaborated the sap, perfected the fruit and seed, which nature intended they should do, and they have got through with their business. Then, there is another thing in regard to strawberry plants, which is not generally understood,—that the roots are perennial, to a large extent. Those roots begin to die immediately after the fruit is produced, and during the season most of the old roots die, and new ones start out directly above the old ones. Those roots dying out, the leaves exhaust the plants, which the roots are in no condition to support. Now, by taking off those leaves, which have become useless and exhaust the plants, we simply aid nature, and thereby do a scientific thing. I know, therefore,—I do not guess about it, nor is it any nonsense or theory, but is a well established fact,—I have practised this method for many years. It has lately been practised by my neighbors with perfect success.

QUESTION. You don't remove the leaves?

Mr. MOORE. I rake off everything I can, at the start.

QUESTION. I have heard some strawberry growers say that liquid manure was the best for strawberries. What is your experience in regard to that?

Mr. MOORE. Liquid manure is used by exhibitors at horticultural exhibitions to some extent, to make large fruit, but it would not be convenient, perhaps, to use it on a large scale. I have used a cord of manure, which cost \$20, from the pork slaughtering tanks,—where they steam the heads and waste pieces of the hogs, to get out the grease,—mixed with five cords of beach mud to the acre, and had as good success as I ever had on the light land I was telling about.

QUESTION. Do you ever use what is called night soil on strawberries?

Mr. MOORE. I have not, to any extent. I want to use a manure that will be lasting in the outset. I knew that this waste, having a large portion of bone in it, would be lasting. I use stable manure, but I want it decomposed; because, if you use barnyard manure in anything like a raw state, you are very likely to be troubled with grubs. I do not have any difficulty with grubs, on land that has been planted for some two years before setting out the strawberries.

Mr. Hyde has referred to the difficulty with the Wilson strawberry, in consequence of its not running. I do not have any trouble at all. I attribute that to the planting out of the strawberry. The strawberry should be planted as early as you can get your ground dry enough to plant. Some of my neighbors run a furrow along, and set the plants on the side of the furrow. I think that is a poor way. One objection is, that I want my rows straight. If there is anything I pride myself on, it is the straightness of my rows; nothing would annoy me more than to have crooked ones. Then, again, I can't afford it; it is not a profitable way of doing the work. I generally run a roller over the field, and lay down a line that will stretch clear across it, and open a furrow with the edge of a spade, four inches deep. I generally cut off the ends of the roots, and then set them against the smooth side of the furrow. I think a good deal of the trouble in raising strawberries comes from bad planting. You will find plenty of farmers, men who are so anxious to get along quick, and to save a little time, that they do it at the expense of a good deal of money in the

end. They will put a whole wad of roots in a bunch, and of course a large portion of those roots will rot, and the plant will stand still; it won't grow. No matter where I plant strawberries, if it is on nothing better than a gravelly hill, they always cover the ground the same year. On the hill to which I have referred, the vines planted last spring now cover the ground, and are a foot high. It is simply from being what I call well planted out, and the cultivation I give them. That is, I keep the ground stirred; I don't raise any weeds. I have raised just as good a crop of weeds as was ever raised in Bristol County, but on figuring it up, I made up my mind that it was about the poorest crop I ever raised.

QUESTION. What is your experience with reference to planting in the fall?

Mr. MOORE. I do not do that. I have planted some this fall; some new varieties. I have a passion for raising seedling strawberries and grapes, hoping to get something that will be pretty good. I think I have got it now. But I have raised a great many, with which I had no success.

QUESTION. Why won't a furrow answer?

Mr. MOORE. In the first place, you cannot get your rows so straight; and, in the second place, by the time you get your ground levelled, you have not gained anything in time.

The CHAIRMAN. The farmers in various parts of the Commonwealth have, in a degree, followed the suggestions of Dr. Loring. He has suggested that, instead of attempting to raise half a dozen crops, the culture of which they did not understand, they would make a specialty of certain things,—fruits or vegetables. I know that this recommendation has been followed in some parts of Eastern Massachusetts, and with good success. Dr. Loring is present, and I wish he might follow up some of the suggestions he has heretofore made, which have proved so important and so profitable to the farmers who have followed them.

Dr. LORING. It seems to me a little hazardous for me to undertake to discuss fruit culture, after the reputation I have secured in the Commonwealth as opposed to fruit growing. I have explained my position on the fodder-corn question, and now I rise for another explanation. I have never opposed fruit

growing at all, sir. I have said that I did not think the growing of apples in large quantities was a part of profitable agriculture in this Commonwealth; and when I assumed the ground to which you, sir, have alluded in calling me out, with regard to the adoption of specialties in farming, I rejected the growing of apples, because it seemed to me that that belonged so much to general farming that it did not come into that branch which was specially profitable, and which you could pursue here in Massachusetts with advantage.

Now, let me explain a little about my views, and about orcharding as conducted in the old-fashioned way. I agree, that there are certain localities on almost every farm upon which apples can be grown, to a certain amount, with some advantage,—ground that is not fit for the rapid growing of the heavy feeding crops. I mean by that, soil that is not too strong, has not too large an amount of either vegetable matter or clay in it. Soil of that character, it seems to me, is fit to grow apple-trees on. Shaley land, land around ledges, land in which there is a great deal of decomposed rock, and a great deal of mineral matter, and especially the soluble salts, I have seen used for the growing of orchards to great advantage, especially in these modern times, when the growing of an apple-tree is a very difficult thing. Now, wherever there is upon a farm a piece of ground of that description, I would not object at all to occupying it with some apple-trees; not that I think those trees are going to make the farmer's fortune, but because I think they are a useful adjunct to the farm. The apple is a healthful fruit, and whenever you can get a crop,—which you cannot always do,—it is a good fruit to have upon a place. But in regard to the profit of orchards, as formerly planted by our ancestors, I still have great doubt, and I think the doubts are well founded. I have discovered that, more than seventy-five years ago, the same doubts were raised in England, in regard to the profit of apple orchards. If you will look into Sir John Sinclair's "Code of Agriculture," you will find that the rents of orchard lands were lower than the rents of any other agricultural lands in the kingdom; and my own experience and observation have shown me that there was good reason for it.

I can illustrate by describing the condition of affairs that

existed on my own farm in 1856, when I took possession of it. That farm had been famous for its orchard. It was one of the early orchard farms in the State of Massachusetts, and the trees were all of rare quality. They were nearly all of them imported by an ancestor of mine from England, and were the choicest varieties then known in England; what are known as the "Garden apple"—I doubt if it is ever seen outside of Essex County—and the "Pickman Pippin," one of the finest apples for cooking in the world,—a large, handsome, yellow apple, with a blush on one side; its acid as keen and lively as the cranberry, and perhaps a little sharper. That apple was among those brought over, and the reputation of that orchard was abroad over all Eastern Massachusetts. All the connoisseurs and amateurs in the place went there to get the best apples to be found. That orchard was planted somewhere about the year 1810. It occupied the best land on that farm, right around the barns, which were large and ample. There was one barn capable of holding fifty or sixty cows, and the hay to feed them. Right round that barn, the warmest, the mellowest, the best drained, the finest land for all sorts of vegetables, especially for the growing of onions, was occupied by these orchards; and much of the best grass land of the farm, which is very fine indeed, was occupied in the same way. These trees had stood there nearly half a century when I took the place. For fifteen years after they were planted, I find no record of the produce from the trees; I would not expect any; but meanwhile it was necessary, in order that the trees might grow thriftily, that the land should be kept up, and the farmers who occupied the farm were deprived of the profit of getting their crops from the land immediately adjoining the barnyard, and subjected to the expense of hauling the manure over a mile to other fields, in order that these apple-trees might be kept in good condition. Then I find an entry in the record of a certain year, after this orchard was fifteen years old, that the tenants paid their rent—which I think was \$1,200—from that orchard. It was considered a great feat on the part of the orchard, that it had paid the rent of the farm; but it was so rarely that it paid the rent of the farm, that they thought it a matter worthy of historical record. But only every other year, for the remaining years

until the trees began to decline, did that orchard yield anything which was considered worthy of record. Meanwhile, the trees were manured to a tremendous extent; an abundance of barn-yard manure, and a great quantity of night soil, were annually employed in keeping those trees in what was called a good growing condition. About the year 1835, the yield of that orchard was so great, that there were twenty-eight hundred barrels of apples barrelled on the farm, and innumerable heaps left to decay on the ground; but the price which the apples brought, upon which the expense of gathering and barrelling was laid out, was so low, that it was not considered, by any means, a profitable crop.

When I took the place, in 1856, the trees were all out of condition. They were enormous, as you may well suppose; they had grown as all apple trees grow in very fertile soil which has received an abundance of manure. What was the first thing for me to do? I had been told by old Col. Pickering, who is the best agricultural authority in Essex County, that bone was the manure to restore apple-trees. I thought he knew all about farming, and I went to work. I cleared out all the dead wood and any limbs that seriously interfered with the rest of the tree; I had a good many of the trees grafted with the choicest fruit I could find; I had the soil all round the trees revived with lime, bones, and everything of that description; I spent a great deal of money on those old trees; I had a respect for them as ancestral trees, in the first place, and in the next place, I expected to make my fortune by renewing those old apple-trees. Well, they looked finely, for about three years; everybody driving by said, "A new man has got hold of this place, and he makes it shine." I thought so, too; and by-and-by, I got one crop of fair apples, but the old vitality was not there. The trees would blossom,—they tried hard; they did the best they could,—but the "Pickman Pippin" and the "Garden Apple" were small; they did not grow rapidly enough to keep away the insects that infested them, and they were late. The crop was never a good one, so that the people who used to come there to get their favorite apples, after seeing the orchard renewed, went away and said I was a humbug, and the apples too. That was the result of my

attempt to restore that respectable old orchard, and that is the history of the profit of that orchard, one of the finest ever planted in the State of Massachusetts. Now, do you wonder that I take a little exception to occupying such lands as those, right round the farm buildings, within two miles of as good a market as there is in this Commonwealth, with apple-trees that gave no fruit to speak of for fifteen years, and were old at fifty? And then the competition is with everybody else, who has just as good a chance as you have.

That is one thing. But there is another trouble. We are not only besieged with insects injurious to vegetation, but every man knows that it is the hardest work in the world to make an orchard bear. I have had a hundred men, if I had one, come to me and say, "When you come round our way, I wish you would come and see what a thrifty orchard I have got,—how well it makes wood; but not an apple can I get." I have no doubt there are a hundred, perhaps more, orchards in this State that are simply ornaments to the ground upon which they stand; why it is, I cannot tell. I have recommended root pruning, surface dressing with bones, keeping away the barnyard manure,—which will make wood but not fruit,—and all sorts of things of that description; but somehow or other, the cycle has come round in New England when the apple-tree does not do well on our soil, so that I have come to the conclusion that it is not profitable for the farmer to occupy good land, on which he can raise annual crops, with apples. I do not think it is worth while for him to occupy his time in fighting worms and insects, when he could be engaged in more profitable business. It is a good plan for him to plant an orchard large enough to supply him with what apples he wants for domestic consumption, and a little early fruit, which is handy to put into his wagon as he goes in to the market in the morning, but beyond that, I do not think it wise for him to go. The wholesale growing of apples is not, in my opinion, a profitable branch of agriculture in Massachusetts. When I remember that the West is pouring in an abundance of apples, of a satisfactory quality, brought by rail, which are sold at a very low price, it does not seem to me that the farmers of New England can profitably compete with them.

But the growing of small fruit, of every description, is another thing. Take the strawberry. Every man who has help or has a family, can find leisure moments when his help or his children can be profitably engaged in cleaning up a strawberry bed, taking care of it, and gathering the fruit for the market. So the suggestions of Mr. Moore, in regard to the cultivation of strawberries struck my ear very favorably, and I was exceedingly interested in them. I can add only one thing. He spoke about the manures for strawberries. I have never seen anything in my life that would make strawberry vines fruit so rapidly as ashes. If there is any gentleman in the room who has tried them and found any objection to them, I wish he would say so.

QUESTION. What time of the year would you apply them?

Dr. LORING. Early in the spring, on the surface. I never would put ashes underneath for any purpose.

QUESTION. Leached or unleached?

Dr. LORING. Either.

QUESTION. Upon what kind of soil?

Dr. LORING. I have never seen any soil which was good strawberry soil, upon which ashes would not have a good effect. I mean by good strawberry soil, a warm, not too heavy loam, for I do not believe in raising strawberries upon a piece of heavy clay land; they will not do well there, but they will do well upon a somewhat light and warm loam, and on such soil as that, I am sure that ashes applied to the surface will always work well. I do not believe at all in burying them beneath the surface of the earth. I think they need the influence of the atmosphere in order to bring out their fertilizing properties, and that they are dissolved by the influence of the air and the rain in such a way that their fertilizing properties are carried down to the rootlets of the plants with great activity.

Now another thing. All small plants require warmth, and that is the secret of what Mr. Moore said about the amount of fertilization that grape-vines require. I noticed he said, that if grape-vines bore well, made wood enough, and fruit enough without manure, it was best not to manure them. That is true enough; but still, the old-fashioned mode of burying bones and manure four or five feet deep for the supply of grape-vines was entirely erroneous, and for this reason: the roots of the

grape-vines were attracted down into a cold bed, which was utterly at variance with all the wants of the plant, and especially of the fruit. The grape belongs to a warm climate ; always grows, in northern latitudes, in a warm spot. When our ancestors came here they found, as the old historian tells us, grapes that would rival the ancient grapes of Eschol. It was always in the warm, sheltered nooks and against the rocks that they found them. Now to attract the roots of any plant of that description down into the cold regions of the soil is entirely wrong, and no man can gainsay it. It is surface dressing, therefore, it is an abundance of ashes upon the surface, that is best adapted to increase the fruit-bearing of grape-vines. I think the same thing holds good in regard to the peach, and that if we will adopt the practice of surface dressing all the small fruits, and all those delicate fruits that we are beginning to grow, it will be of great advantage to us ; not using the heavy, fatty, nitrogenous manures, but such manures as I have described, which are filled with soluble salts and phosphates. I think that rule will hold good with regard to a very large proportion of the fruits which we can now raise to a profit. That we can grow pears on quince stocks to a profit, I have no sort of doubt. It is a delicate, nice piece of business, it is a matter of horticulture, I know, but there are really few farms upon which a piece of land fit for that purpose cannot be found. The trees need protection ; I do not think there is any delicate fruit in the world which will bear the colds of New England. So true is this, that the old New England St. Michael's pear, which, when it was in its glory, was not surpassed by any other variety,—I wish it would come back again!—will not grow at all unless trained as a wall fruit. I have seen it trained right against a wall, and a very curious thing about it was, that wherever a stem hung out, and a pear formed upon it, it was split and cracked under the influence of the wind. I think that peach and pear trees should be sheltered, and I think there is no farmer in the State, with a market open to him, who cannot afford to grow such fruits as I have spoken of. I have always said that they enter into the specialties of New England farming like the cranberry on Cape Cod, seeds in Essex County, tobacco in the Connecticut Valley, and just as the growing of vegetables

may be made a specialty on every piece of land near the great markets.

Mr. — I wish to say a word in regard to the apple and peach. It is well known to every individual who has lived to the age that I have,—threescore years and ten and upwards,—that in old times, when the snow lay on the ground from the latter part of the fall even until into May, and sometimes until the latter part of May, especially around the walls, and in the orchards, that we had enormous crops of peaches and apples. The ground was generally frozen before it was entirely covered with snow, and the frost came out of the ground considerably later than it has in latter years. Our orchards, both apple and peach, never came into blossom until after the frost came out of the ground, consequently, it was later in the season before they put out for bearing. We never had much of any frost after they came out of blossom, and consequently there was nothing to kill the fruit. At the time of the great September gale, some fifty-four or fifty-five years ago, the trees were so heavily loaded with apples, that when they were blown off, they not only covered the ground, but laid piled on top of each other. If apple and peach trees could be kept back now as they were then, I have not the least doubt that they would be as profitable and fruitful now as they were then.

The experiment has been tried by some, I believe; I have heard of one man who had an orchard of some five hundred peach-trees, who became discouraged with it, on account of its not bearing. It would blossom very profusely and very early in the spring, but produce no fruit, and by-and-by he came to the conclusion that he would cut it down as perfectly worthless; but some time in the course of the winter, when the ground had become perfectly frozen and hard, he turned his sheep into it, and carried in a large quantity of what he called rubbish—straw, old stalks, &c.,—which covered the ground all over, and when it came spring, the trees did not blossom as usual; he thought he had killed his trees. He did not cut them down as he had intended, and when finally the frost came out of the ground, his peach orchard bloomed profusely and bore abundantly. I believe it would be just so now, provided the fruit-buds could be kept back. It is the late frosts which come in the spring of the year, which spoil the fruit, not while the

trees are in blossom, but after they have blossomed and the fruit has set. The frost comes and nips the fruit, and it drops off.

Now, the experiment can be easily tried, and at a trifling expense. After the ground is frozen hard, cover up a large circle around the tree, and keep the frost there as long as you can. Then let the tree come into blossom, and see if you do not have fruit.

Dr. DURFEE. I think I will say one word about the cultivation of pears. My friend Dr. Loring has referred to dwarf pears. I want to say, that I have purchased a great many pear-trees. I have more than five hundred now, and I don't think I have one that was grafted on the quince that can stand alone. I have therefore come to the conclusion that our soil, at least, is no place to put pears grafted on the quince. There is no root to it. I say to any one who desires to set out pear-trees, be sure to set out standards. Then I want to say again, be sure and know what you get when you set them out.

Dr. LORING. That is the hardest thing to do.

Dr. DURFEE. A few years ago, when riding on the Western road, with a company of agriculturists, I remarked to one sitting near me, "I want to get about a hundred of the best kinds of pears." Said he, "I can tell you where you can get something that you can depend on." I said, "I shall be happy to know: where is it?" The reply was, "Go to such a nursery-man, and tell him you want a hundred pear-trees of the best quality, and you will be sure to get them; I know you will." So I took the trouble to send my order to that party; he was a particular friend of mine; I had been very intimate with him, and I thought I should get a good lot of trees. The trees came to my place; they are now in bearing, and if I told the truth, I think I should have to say that there are not more than four varieties out of that hundred that are worth raising. What is the result? I have got to graft the whole of them; there is no other alternative; that is, all that have any roots, and can stand alone; some of them, we have had to stake up. I repeat, therefore, if any of you are disposed to set out pear-trees, be sure you get standards; and be sure you know what you get,—if you can. That is the great difficulty.

Now, as to the profit of pear-trees, I will state one instance within the limits of this town. I have tried to encourage peo-

ple to raise pears, grapes, peaches, and all those good things. There is a farm lying within about four miles from here, where, a few years ago, the man who lived there set out a little pear orchard. He is dead and gone, but the property has come into the hands of his sons, and last year, they leased the whole farm to a gentleman across the river, and they fixed the rent of quite a large tract of land,—some of it pretty decent for cultivation, and a great deal of it costing more to cultivate than it is worth,—they fixed the rent of that land on the amount of pears that they had obtained from that place last year. That man paid his rent because he expected a great crop of pears this year, and he had a large quantity, but not so much, perhaps, as last year. I do not believe that farm could be let for more than one-third what it is, if it were not for that orchard.

Dr. LORING. Are those standards, and how old?

Dr. DURFEE. Yes, sir. I think they are all standards. I should think they were seven or eight years old, and they are growing finely. Some of them are twenty feet high.

QUESTION. What varieties?

Dr. DURFEE. I don't know the varieties, but he raised a great many varieties.

Now, my friend asks what varieties of peach-trees I would plant. I would get the white peach. I don't think the Crawford's fit to raise. I cannot raise good Crawford peaches under cover; it is impossible; they are sour and bitter. But get the "Early York" and you will get a first-rate peach. Get "George the Fourth," and you will get the best peach that I ever grew. The "President" is a most excellent fruit. The "Stump-the-World" is a good peach. There are but four or five kinds that I can think of that are worth raising; that is, that I want to raise.

I was very glad to hear the remark that was made in regard to putting into the borders of grapes large quantities of bones and dead animals, and burying them so deep in the ground that they will never be heard from afterwards, unless you dig them up. I have seen the folly of this practice, and I know that the roots of the grape will not go near where they are, because I have seen it. As my friend (Dr. Loring) says, if you want to enrich grape-vines, enrich them near the surface. I will mention a singular fact in regard to grape-vines. We plant

them inside and outside of our grapery—one inside and then one outside, alternately. A few weeks ago, I had occasion to remove the soil inside, and concluded it was better to take it out. I think we had enriched it as much inside as out, for the sake of nourishing the roots. But when we came to dig down, we did not find any root there; the truth was, the roots ran outside, the whole of them. I suppose they wanted to enjoy the sunshine; I don't know what else they were after.

These ideas have been thrown out, in order that if any of you are going into the business, you may know some simple things about it. I wish there were more here to take up the subject and discuss it. It is one of great interest. I think if any one would take it up and give his attention to it, he could accomplish a great deal. If you want to get peach-trees, the best way is to go to Long Island and buy them at the nursery, selecting those about a year from the bud, bring them home, set them out in pots, and then cut off the top.

Dr. LORING. What Dr. Durfee has said about dwarf pears is very interesting; but the plan has been adopted in Essex County, of setting dwarf and standard trees alternately. It is very difficult to make the trees stand up. It requires as much manure to grow dwarf pears as it does to raise a crop of mangold wurzels. They require a great deal of manure, but they mature early, come into bearing early, and they will really come into bearing and go out of existence before a standard will get ready to go to work. That is the advantage of trees on the quince stock.

The statement by Dr. Durfee, in reference to the roots of grape-vines coming out from under glass into the warm light, where the sun shone, is an interesting fact also. You may not all have heard of certain experiments that have been made with the glass of green-houses, grape-houses, &c. It is one of the most interesting of modern discoveries, if true. Gen. Pleasanton, of Philadelphia, tried the experiment of inserting, in every eighth row of panes in his hot-house, a blue pane of glass, the whole length, as I should judge, of his house; and he found that the effect of that blue light upon his vines was such that the grapes in the houses in which that glass was inserted matured many days earlier than where the blue glass was not inserted; that the growth of the vines was much greater, the

quality of the fruit better, the grape larger, and the crop earlier, by the introduction of this blue glass into his grape-houses. He explains the fact upon the theory that there is something in the blue glass which modifies, to a certain extent the sun's heat, and in that way makes it more advantageous to the growth of plants. He went on with some curious experiments. He took a litter of pigs, and put half of them into a green-house made in the usual form, with uncolored glass, and the other half of that litter of pigs he put into one of his green-houses where he had the colored glass, and the difference in the growth of those pigs was so great that in two months those under the blue glass had outstripped the others by more than twenty-five per cent. He then took a sickly bullcalf (I never saw a bullcalf that was not sickly in my life) and put him under the influence of the light through the blue panes of glass, and the effect was wonderful. He revived in a short time, began to grow, and in less than two months he was a new calf, regained his health and spirits and strength, and throve as well as any animal could.

Now, this is a thing worth considering. The experiment is to be tried in Salem. In a little grape-house that is being constructed there, blue glass is to be inserted, and I hope we shall have an opportunity to learn the result.

Dr. DURFEE. Can you tell what effect it would have on a sickly child?

Dr. LORING. There it comes right home. If it is true that blue glass has such an effect upon vegetable and animal life, that is under our control, I should be in favor of having blue glass put into our windows. I have no doubt it would be useful. At any rate, I am willing to try it. What the effect of this blue shade is, I cannot say. I don't suppose it can be accounted for. I don't know how it was discovered, but there is the fact exactly. As Prof. Agassiz once said to me, "Science is nothing but deductions drawn from facts," and there are the facts. That is what Lord Bacon said, too, two hundred years ago.

The CHAIRMAN. Farmers, themselves, are oftentimes surprised at their own foolishness. After selecting, as Dr. Durfee says, with great care, the best fruits,—apples, pears, peaches, or whatever they may be,—they take but little pains in regard to the soil and location in which the trees are planted. In a

climate like that of New England, if the location is not such as to protect the trees during the gales and high winds of the spring months, there should be hedges planted to protect them. My little experience in my own section of the State has led me to believe that our orchards do not, as has been generally supposed, suffer from the north-east winds, but from the south-west winds which prevail at the time when our trees are in blow, and whip them almost to pieces. In very many cases, farmers have been led to believe that their fruit crop has suffered from the severity of the winter months, when it was really on account of these high winds which prevail when the trees are in blow. Those orchards in our section that are protected by what is called "the back-bone of the cape," facing the south-west, have proved fruitful and profitable, and I have seen other orchards surrounded by hedges that have done well. It seems to me, therefore, that while we exercise great care in selecting the best varieties of fruit, we should also be careful in the choice of location.

In most seasons there are apples enough in Brewster and Orleans, and that part of the county; there are in Barnstable very few apples. I will venture to say, that if there are crops anywhere in that section, the trees have been protected, for my own experience has led me to believe that it is only in that way that a crop of apples can be obtained.

Dr. DUFFEE. I do not think it is any object for anybody to attempt to plant an apple orchard now. I am very much discouraged in regard to apples; I think it is next to impossible to raise a crop. I have enough slugs of the canker-worm lying on the ground in my garden, to eat the leaves of all the apple-trees in this city, if they were suffered to go up the trees. The number is perfectly incredible. When I say there are thousands, I do not exaggerate. I find them going all over the county, far and near. The few trees I have in my garden, I have tarred, and I supposed, up to last year, that I had conquered the worm. I did not have a very large number last year, but wherever they did light upon a tree, it was death to the crop; but this fall they have come in greater numbers than I have ever seen them before.

I think, if we are going to do anything to protect our trees, we must begin in time. I did not begin soon enough. I am

very sure, from the attention that my man in the garden has paid to them, that very few have been able to pass over the tarred paper that I have put around the trees. In a few instances, where the rain affected the tar so that it did not stick to them, they would get over it.

Mr. GOODMAN. I should take some exception to the remarks of Dr. Durfee, so far as our locality is concerned. It won't do to say that apples cannot be raised on account of the canker-worm. There are no canker-worms in the western part of the State. In that part of the State, there is a large quantity of land adapted to apple-trees, that cannot be used for anything else. Therefore, we find apples a good crop to raise, on land that is almost barren, or, from its exposed situation hardly adapted to farming purposes. We raise large crops of apples up there, and find them a valuable crop, and shall continue to raise them.

So it is with pears. There is no tree that is so much affected by the soil as the pear. You cannot raise pears on the sandy, gravelly soil of Connecticut; but take a soil with some clay in it, or a good loam, and pears will grow there. Although I agree that pears on quince stock are not so good as others, still, they are good. They were grown in that way among the ancients. The ancient Greeks always cultivated the pear in that way, and it was the only way they could do it. It grows much more rapidly on the quince stock than on the pear. The practice with us is, to grow dwarfs in between the standard trees, and the dwarfs die out before the others come into bearing, or, at any rate, soon after, and then the ground is cleared. I have some forty dwarf trees, and this year they have all borne profusely, so that I had to support the limbs. That land has been in pretty good condition, all the time. I always top-dress in the fall, and mulch to some extent, and those trees have borne fully for many years. But there are standards which are highly recommended for a great many purposes, particularly for coming into early bearing. We have the "Doyenne d'Été," now recommended as the best early pear. The standard tree will come into bearing in four or five years. The only trouble with it is, it is a rapid grower and a heavy bearer, and wants pruning, and the land ought not to be highly cultivated. That

is followed by various other sorts, particularly the Seckel, the Bartlett and the Lawrence. Almost any farmer can have a crop, and there is no tree that requires less pains and attention. Good trees are to be got from good growers, and they are very cheap. The great trouble is, they are not planted with any care. Instead of there being a little hole dug with a spade, and the roots put in just as it happens, you want to make a hole large enough to spread the rootlets out in a proper way, and then the earth put in and carefully packed. A tree that is properly planted in that way, the ground having been previously prepared as it should be, is half grown; there is no difficulty about it. The dwarf trees, of course, require more manure than standard trees; but, after all, I lose more trees by having my ground too rich than I do from any other cause.

There is nothing that troubles the pear with us so much as the sap blight. It is a different thing from the insect blight. It comes because of the ground being rich, and the wood growing too heavily, and in the fall the sap is frozen, and the tree killed. I have lost, for several years past, a good tree almost every year in that way. Therefore I am particular not to manure my trees too highly. After giving my standards good cultivation for two or three years, to start them, I do not give them anything more. My dwarf trees, I generally dress every year, in the fall, and mulch them. I generally take pure coal ashes, and spread them about the roots of the tree, and then top-dress with ordinary manure, and spade in the spring.

Then there is another great difficulty with our trees. As I go through the country, and see how the farmers treat their trees, I don't wonder they do not grow. They set out their trees, and then raise grass and clover in the same field, and it is impossible for them to grow. The land should be ploughed and cultivated regularly for several years. In four or five years, after they get well grown, and the ground thoroughly cultivated, there is no necessity for having any crop upon it. After a few years' time, if you have nourished it enough, the land ought to be put down to grass, and allowed to lie for several years, before it is cultivated again.

I think the pear has not had so much attention paid to it as it should have had. It is a fruit every family likes, when they

can get it, and it is a fruit that now brings a good price in the market. I do not pretend to be a great fruit-grower, but I have found the pear one of the easiest things to raise, and it is the one that I have had the most success with. It now furnishes me, some seven or eight years after planting, a delicious crop, from August down to the present time; and they will run for a month or two longer.

There is one other thing to be said about the pear,—that it ripens best in the house. There is hardly a variety that can be ripened well upon the tree. The great advantage of this is, that you can pick them when they are comparatively green and hard. Take, for instance, the “Flemish Beauty”; that will bear picking earlier than almost any other. Put the fruit on your shelves, or into drawers, and it will ripen up beautifully, and have a fine flavor; and in that way, they ripen gradually, and continue along through several weeks; whereas, if they are left on the tree until they get dead ripe, as most people leave their pears, they all ripen at once, and there is a great loss.

Mr. HUBBARD. With the address of this evening, the exercises of this convention will close. I wish to say, that it is customary for the Board to hold meetings in some part of the State once a year, for the interchange of ideas, and to stimulate to renewed energy all those interested in this great branch of industry. By invitation of one of your citizens, the Board have spent the last three days in this city, and before leaving it, I desire to offer this resolution:—

Resolved, That the thanks of the Board be tendered to the citizens of Fall River, and especially to Dr. Nathan Durfee, for their generosity, courtesy and hospitality to us on this occasion.

The resolution was passed unanimously.

Dr. DURFEE. Permit me to say, sir, that the thanks of this community are due to the Board of Agriculture for the valuable and interesting information which has been imparted to them during the last three days. Especially, gentlemen of the Board, you have my thanks. I hope you will leave this place with the best wishes that our prosperity, of which you have had some evidence since you have been here, may be continued in the future.

The Board then adjourned.

EVENING SESSION.

The Board met at 7½ P. M., to listen to the following lecture upon

WHAT MODERN SOCIETY OWES TO SCIENCE.

BY DR. GEORGE B. LORING.

GENTLEMEN: — The annual meeting of the Massachusetts Board of Agriculture, for public lectures and discussions, is now about to close. It has been a session of unusual interest to all who are interested in agriculture, illustrating the deep desire of those who pursue this calling in large measure or in small, to ascertain the best laws by which they can be guided. The inquiries and deliberations of this Board mean an attempt to introduce the best theory and practice into an occupation, which, while lying at the foundation of all industry, has too generally been conducted without well defined rules, and has puzzled the scientific investigator by its successful crudities, more than the deepest problems have by their intricacy. The success of agriculture hitherto has been owing more to the fidelity of nature, and to her ready response to every reasonable call, than to fixed principles and accurate systems. The strong arm, the steady head, and the industrious purpose have prevailed. But when the worn and weary student has left his closet for the field, carrying with him none of those instinctive faculties which are born and cultivated beneath the open sky, he has been doomed to disappointment. When Burke withdrew from his brilliant and dazzling career, in which he had astonished even the genius of his time, and had secured for himself an immortal name among the greatest, and had retired to his farm at Beaconsfield, he found his eye too dull, and his thought too vague, and his judgment too narrow, for the sudden and unexpected emergencies which met him every day and everywhere on his farm. The weapons which he had used in his contests with his fellow-men, were useless when brought into a struggle with those obstacles which attend the changing seasons, and all the various conditions of soil and climate. His statesmanship was a brilliant success, his farming was a painful failure. And from his day to our own the disciplined mind has looked with envy upon the success which has attended the exercise of keen and quick perception, unerring judgment,

readiness in emergency, and steady common sense in the practical duties of agriculture.

Now, it is to remove this trouble, and to give the weak a fair chance with the strong, that careful agricultural investigation, and the application of science to the business of farming, have been so earnestly urged and so liberally provided for in our day. I cannot tell precisely how much benefit is to be derived from our labors. But I am sure that we may here learn of each other the laws by which agriculture can be conducted, and the principles which we may profitably apply to the land, and to the care of our flocks and herds. And when I call to mind the sure prosperity, the domestic happiness, the social repose which gather round a rural home here in New England, or which God intended should gather round such a home, I cannot believe that the tastes acquired in this assembly will be wasted, or that the knowledge acquired here will be useless. To the substantial prosperity which agriculture, even in its rudest forms, has always presented, and to the comfort and happiness which have always been accorded to the farmer's home, and which some of us have found there, are now added the great results which science lays at the feet of this as she does of every other pursuit in life, in our day. The problem which the student of agriculture is called upon to solve is how far he can apply scientific rules to the economy of the farm, and how largely the general prosperity of an agricultural community can be increased by the introduction of intellectual training into this especial business of life. How this problem will be solved I have no doubt. And feeling as I do the great obligations we are under to the scientific mind of our day, I shall leave the path which you have trod so well in your discussions, and ask you to consider the mighty efforts which man has made to solve the mysteries of nature for his elevation and practical benefit, and to render it possible to establish this very State Board of Agriculture, which three centuries ago would have been an impossibility.

For the practical farmer, we have discussed the various modes of cultivation, the management of animals on our farms, the application of chemistry to the improvement of the soil, and the various methods by which the prosperity of the calling can be secured. The subjects of theoretical and practical agri-

culture seem to be exhausted, and I dare not venture upon either a repetition of what has been said here, or upon still further investigation upon matters which have been subjected to your own exhaustive inquiries, and so remembering that it was the establishment of a Board of Agriculture in England which first introduced scientific principles into the practice of farming, and gave Sir Humphrey Davy his first opportunity for useful service in this direction, I propose to lay before you the steps by which man has arrived at the possibility of this connection between science and the practical affairs of life. The way has not been easy. Three centuries ago the educated mind of the world had rejected the very foundations of such a connection; and it is a matter of special interest to us to know the process by which this scientific possibility has been reached. Now, the great feature of our day is, that everywhere in cultivated and civilized society may be found an intense and serious effort to infuse the accuracy of scientific investigation into all practical affairs, and into the broad foundations of the Church and the State. Turn your eyes in any direction, and you will find the most powerful human intellect engaged in this labor.

The scientific period has arrived. The profound and masterly minds of the age—Humboldt just now gone, Agassiz resting for an hour only, as we trust, to return with renewed vigor to his imperial career in the realms of science, and their great investigating fraternity on both continents—have placed science at last in the divine regions of human genius, once occupied by the poets and historians, and orators and philosophers, who so long enjoyed undisputed sway as masters of human thought. The prediction made by Dr. Young, in the latter part of the last century,—a prediction then, and a familiar reality now,—has been more than fulfilled. Remembering, as he did, that “the last two hundred years have done much more for the promotion of knowledge, than the two thousand years which preceded them,” he says: “We have therefore the satisfaction of viewing the knowledge of nature not only in a state of advancement, but even advancing with increasing rapidity; and the universal diffusion of a taste for science appears to promise, that, as the number of its cultivators increases, new facts will be continually discovered, and those which are already known, will be better understood and more beneficially applied.” And

he adds a word which I quote here for the encouragement of the Board of Agriculture, in that career of usefulness, which has thus far grown with its growth, and strengthened with its strength, and which may not pause until its cheering influence is felt throughout the entire domain of practical science. "The Royal Institution," he says, "with other societies of a similar nature, will have the merit of assisting in the dissemination of knowledge, and in the cultivation of a taste for its pursuit; and the advantages arising from the general introduction of philosophical studies, and from the adoption of the practical improvements depending on them, will amply repay the labors of those who have been active in the establishment and support of associations so truly laudable." Not, however, in the two centuries preceding this declaration, nor in the half century preceding, but in the short and eventful period which has followed, have the great achievements been made. The brilliant career of Buffon had just closed; but Laplace and Cuvier and Davy still lived and made promise of that wonderful march of science, which rose before the mind of Dr. Young, who might now be lost in admiration, before the imposing monument erected upon the foundations laid by his distinguished contemporaries. For now it would not be the labors of the great alone which he would be called upon to admire, but that "deliberate and concurring judgment of common minds," as Lord Bacon calls it, which has made science familiar to us all, and has filled the highways and by-ways of society with its life-giving fruits, and the human mind with its invigorating modes of thought.

And, now, surrounded as we are by all the blessings which science can bestow, and by all the promises which its enthusiasm can make, we cannot and should not forget the severe and desperate struggles it has been obliged to make in its upward progress. The cruel agony and torture which have visited the religious reformer; the poverty and contempt and despair which have made death welcome to so many of the sons of genius, whose immortality is now man's great inheritance; the hard and unequal warfare maintained by those who have fought for human freedom and equality and right, are familiar to us all. But not one such trial alone, but all and more have fallen upon, and harassed and persecuted those who have endeavored, by scientific research, to ameliorate the condition of mankind,

and to "look through nature up to nature's God." It is indeed difficult for us to realize, that against the theory that the earth is a terraqueous sphere, the whole power of the Christian Church should have armed itself, as late as the sixth century; and that nothing but the fact of circumnavigation, centuries later, dispersed the ecclesiastical forces. We turn with shame from the ignominy heaped upon Copernicus while living, and the insults to his ashes when dead; from the imprisonment, and torture, and fiery death of Bruno; because they proclaimed the great scientific fact, that the earth and planets revolve about the sun. Our hearts are moved with indignation and sorrow as we behold Galileo, driven from the pale of Christianity, denounced, tormented, forced in his old age to "abjure, curse and detest the error and heresy of the movement of the earth"—because he had worn out his great life in studying the glories of the heavens which God had made, and had taught the world that, in obedience to the divine harmony which set the constellations in their places, the earth did move, with its starry companions, around a common centre. We can hardly believe that the first great anatomist was exiled by the lovers of "sound learning," in one of the most enlightened and pious courts of Europe; and we hasten to forget that in our own day, in the name of religion, the best geologists, men of exemplary lives and an abiding faith, have been denounced as infidels and atheists, for having opened that volume on whose stony pages are written the succeeding chapters of creation, and the great laws of an all-wise Creator.

But this severe struggle between science and religious dogmatism, that strong fortress, behind whose frowning bastions the most fervid religious faith is prone to seek shelter and protection, is small when compared with the long and bitter contest which attended its emancipation from the tyranny of intellectual arrogance and pride. Contrary to that modern theory of science which would dispense, with a large and liberal hand, the bounties of sound learning to all men; "for the relief of man's estate," the ancient philosophers assumed that the object of all learning was to elevate man above this sublunary sphere, and to fill his mind with a lofty indifference to all his wants and necessities and comforts. "Philosophy," said Seneca in reply to Posidonius, who inadvertently complimented science, for

having discovered the principles of the arch, and the proper use of metals in the arts,—“Philosophy teaches us to be independent of all material substances, of all mechanical contrivances. The wise man lives according to nature. Instead of attempting to add to the physical comforts of his species, he regrets that he was not cast in that golden age when the human race had no protection against the cold but the skins of wild beasts, no screen from the sun but a cavern. To impute to such a man any share in the invention or improvement of a plough, a ship, or a mill, is an insult. In my own time, there have been inventions of this sort,—transparent windows, tubes for diffusing warmth equally through all parts of a building, shorthand, which has been carried to such perfection that a writer can keep pace with the most rapid speaker. But the inventing of such things is drudgery for the lowest slaves; philosophy lies deeper. It is not her office to teach men how to use their hands. The object of her lessons is to form the soul: *Non est, inquam, instrumentorum ad usus necessarios opifex.*” “We shall next be told,” exclaimed he, “that the first shoemaker was a philosopher.” It has been well said that in the minds of such men as he:—“The business of a philosopher was to declaim in praise of poverty with two millions sterling out at usury; to meditate epigrammatic conceits about the evils of luxury, in gardens which moved the envy of sovereigns; to rant about liberty, while fawning on the insolent and pampered freedmen of a tyrant; to celebrate the divine beauty of virtue with the same pen which had just before written a defence of the murder of a mother by a son.” But it was this style of thought and speculation which occupied the attention of the world for more than two thousand years. Socrates, Aristotle, Plato, Seneca, Cicero, all lived in an atmosphere of intellectual superiority, which enabled them to transmit to the student all the sublimity of thought, of which finite man is capable, all the moral elevation which the human heart can reach, all the religious confidence and trust which man can attain unaided by the light of revelation. It is not surprising that through so many ages they should have exercised supreme sovereignty in the kingdom of thought, and that great minds should have followed them, and little minds have been obedient to them. Nor, perhaps, is this a misfortune. For it were not easy to tell

the intellectual effort which they have inspired, nor to count the scholars they have created, nor to value too highly the assurance which they have given to mankind, that the monuments of genius shall not decay, even though material grandeur shall perish and be buried beneath accumulating dust. We are willing to walk hand in hand with them through those long ages, in the darkness of which their lights were not extinguished, and in the radiance of which it was their scholarship which prevailed. But we can imagine how our obligations to them would have been increased, had they and their followers substituted for wearying disputations, an encouraging word for natural philosophy as the foundation of useful discoveries, and not as a subject for fresh controversy and mere mental exercise. Nature and the generations of men can afford, I have no doubt, to wait for light; but still the hours are weary. And I knew no story in all the history of man's intellectual endeavor, sadder than that of the one great scientist of the middle ages, who, blinded by the lustre of scholasticism, and bound hand and foot by the rigors of ecclesiasticism, struggled in vain to emancipate practical science, and left behind him his own hints as a guide, and his own failure as a warning to his great namesake, who, coming after him, fell on more fortunate times. We are told that when Roger Bacon in 1234, studied mathematics, physics, and astronomy, and impoverished himself and his friends in purchasing the most costly instruments of his times, experimental philosophy was little in vogue, and his researches excited the hostility of his fellows. He was a devoted student of Aristotle and all his commentators in every language; but he found it impossible to carry the teachings of this great philosopher into practical science, at a time when all science was considered no better than heresy, and its results no better than magic. His writings were condemned; in his old age he was imprisoned; and he died in neglect. He was the great anticipator of science and the scientific age, which dawned upon the world three centuries after his death. He conceived the discovery of the telescope, and knew the composition of gunpowder, but was not permitted to witness the glorious revelations of the one, nor the irresistible force of the other. With his mind filled with visions of scientific grandeur, he could get but little farther than to declare that the causes of the intellectual torpor and ignorance

of the era in which he lived, were too much blind confidence in authority, too much respect for custom, too much regard for popular prejudice, and too much conceited selfishness, which induces one to regard as dangerous and puerile whatever he does not know. But he “claimed for human reason the right to exercise a severe control over all the doctrines submitted to its approbation ; he insists upon the dignity and the importance of the sciences, none of which are to be proscribed, and all of which are to be cultivated ; and he establishes experience rather than reasoning as the proper method of research.” And so this great man surrendered, leaving behind him only his appeal for intellectual progress, and preparing the way for a more defiant and revolutionary age of great discoveries, and popular assertion, and religious reform, and emancipated science. Three centuries passed away before his prophecies were fulfilled.

And now the great struggle commenced. Men still believed with Plato that science was a mere intellectual exercise and amusement ; that the study of arithmetic was not intended for any practical service in life, but to habituate the mind to the contemplation of pure truth ; that mathematics applied to any purpose of vulgar utility became a low craft, as he called it, fit only for carpenters and wheelwrights ; and was no longer a noble science “leading men to the knowledge of abstract, essential, eternal truth ; that the use of astronomy is not to add to the vulgar comforts of life, but to assist in raising the mind to the contemplation of things which are to be perceived by the pure intellect alone ;” that the science of medicine should be applied only to those whose constitutions are good, and not to those who by inheritance, or excess, or exposure, or accident, have become so permanently enfeebled that their heads grow giddy and full when exerted in the studious contemplation of divine philosophy,—the remedy for feeble constitutions being death ; that the science of legislation was based upon abstract virtue, and not upon that practical wisdom which would prevent and reform crime, and build up a state upon the principles of patriotism, and honesty, and courage, and honor, and furnish the highest faculties of man an opportunity to exert themselves “without being molested or insulted for it,” as Gen. Grant said in his memorable conversation with Judge Hoar.

But this was not enough to satisfy the mind of Francis Bacon, who now assumed the leadership of the great scientific revolution, begun by him, and carried on in our day by the devotees of science everywhere. Entertaining profound respect and admiration for the great thinkers of ancient times, to whom I have alluded, and moving by his own natural forces along the same high plane of thought which they occupied, he stooped down and lifted into their august presence that useful and manly and homely attribute known as common sense. To be a philosopher meant with him to be the most useful man in the world; and so to him belongs the praise of having invented, methodized, and in a considerable degree perfected the general plan for the improvement of natural science by the only sure method of experiment. "Instead of hypotheses he asked for facts, gathered laboriously from the watch of nature's silent revolutions, or extorted skilfully by instruments and trials, and carried forward by careful generalizations from the world of the known to the unknown." He reasoned always from causes to effects; and so impatient was his mind of mere abstractions, that he never rested until he had brought his conclusions to some practical benefit. "He clearly, for instance, conceived of a thermometer; he instituted ingenious experiments on the compressibility of bodies, and on the density and weight of air; he suggested chemical processes; he suspected the law of universal attraction, afterwards demonstrated by Newton; he foresaw the true explication of the tides, and the cause of colors, which he ascribes to the manner in which bodies, owing to their different texture, reflect the rays of light." Ask a follower of Bacon, we are told, what the new philosophy as it was called in the time of Charles the Second, has effected for mankind, and his answer is ready:—"It has lengthened life; it has mitigated pain; it has extinguished diseases; it has increased the fertility of the soil; it has given new securities to the mariner; it has furnished new arms to the warrior; it has spanned great rivers and estuaries, with bridges of form unknown to our fathers; it has guided the thunderbolt innocuously from heaven to earth; it has lighted up the night with the splendor of the day; it has extended the range of human vision; it has multiplied the power of the human muscle; it has accelerated motion; it has annihilated distance; it has facilitated intercourse, correspond-

ence, all friendly offices, all despatch of business ; it has enabled man to descend to the depths of the sea, to soar into the air, to penetrate securely into the noxious recesses of the earth, to traverse the land in cars which whirl along without horses, and the ocean in ships which sail against the wind. These are but a part of its fruits, and of its first fruits. For it is a philosophy which never rests, which has never attained it, which is never perfect. Its law is progress. A point which yesterday was invisible is its goal to-day, and will be its starting-point to-morrow."

I have said that Lord Bacon endeavored to found his theory of philosophy on common sense ;—I think he established the process by which he could reach the highest philosophical truth, upon the principles of common honesty. He proposed no new method of reasoning. The danger and weakness of syllogism were discovered long before he was born ; the value of induction had been recognized by scholastic and scientist for centuries. But Bacon realized that a process of induction which failed to recognize all existing and possible facts, whether by accident or design, is as fatal to truth and sound philosophy as a syllogism which, unmindful of the fallacy of accidents, proves that we eat raw meat :—" we buy raw meat in the market ; what we buy in the market we eat : therefore we eat raw meat." He knew well that the inventor and discoverer who would arrive at any conclusion, valuable to himself and mankind, or the scientific explorer who would open new paths to useful knowledge, could not afford to shut his eyes to any facts or phenomena connected with the work upon which he was engaged. He felt that the recognition of error and failure is as important in all investigation as the recognition of truth. He turned the process of induction, therefore, from the scholastic business of making a good syllogism, perhaps of no value whatever, to the philosophical business of making a great discovery, or arriving at a great truth, invaluable to millions of the sons of men toiling to elevate themselves into the highest regions of civilization, with all their mortal necessities and their immortal aspirations. He was as impatient of fallacy, as he was of an accumulation of facts from which no principles could be deduced, and so he threw aside the books of the ancient schoolmen, because they taught nothing for the discovery of useful truth ; and he burnt

the books of the ancient farmers, because they laid down no laws, and could therefore be of no use to any man. How he would have rejoiced in Franklin who caught, and Morse who used the lightning; in Brancas who discovered the power of steam, and Watt and Fulton who applied it; in James Smith, of Deanston, who invented tile drainage, and in John Johnston, of New York, who has employed it in a successful warfare against drought and flood, and the wheat-midge; in Count Rumford, who, having made a profound study of the theory of heat, set himself at work inventing fire-places, and grates, and ovens, and cooking-ranges, and founded a professorship of the application of science to the art of living; in Agassiz, who, having studied botany with Martius, and the embryonic development of animals with Dollinger, and the principles of classification with Oken, and zoölogy with Cuvier, joined hands with the farmers of Massachusetts in their investigations of soils, and crops, and animals, and taught the fish commissioners of Massachusetts how to stock the lakes and rivers of that industrious and enterprising Commonwealth! What an admirable professor in a school of technology Bacon would have made! What an efficient and accomplished president of a model agricultural college!

When Lord Bacon introduced the demands of common sense, and the principles of common honesty, into philosophical reasoning and investigation, when the student of nature adopted the motto of "*Nullus in verba*," and listened only to the result of experiments, or to the unerring mathematical deduction from those results, then the temple of science was raised with rapidity and triumph, by the accumulation of facts upon facts, which were firmly cemented by the strictest reasoning. And then the emancipation of science was achieved, and that struggle began which, in various forms, has continued to this day. And what an era of emancipation was that in which Bacon wrought! Everywhere the bonds which had bound man's soul seemed to be breaking. Between the birth and death of Bacon, America opened her arms, to receive the oppressed and persecuted. The Huguenots brought their protesting faith to our southern shores. The Puritans, who had kindled and preserved the "precious spark of liberty" in England, having sought shelter in vain in the Old World, braved the dangers of

an almost unknown sea, defying with their fervid hearts the freezing storms of winter, and the still more freezing storms of man's bigotry and persecution, and planted popular right and independent Christian worship in the New World, and gave an immortal soul to the empire of human equality on this continent. In the world of thought Shakspeare performed his divine and undying work. In the world of science, Harvey discovered the circulation of the blood; Drebel invented the thermometer; Torricelli invented the barometer; and Kepler erected as a monument to his genius, the "*Astronomia nova celestis*." It was the era of mental and moral protests and assertions, from which our own great privileges and opportunities have sprung.

From that period, the struggle which science had so long carried on against bigotry and intellectual arrogance, has been conducted, with a spirit of "audacity and sobriety" worthy of its great master, against the natural obstacles which lie in the way of finite man, in his endeavors to comprehend and employ the works of Infinite Wisdom. Once free, science has not been disheartened in her career of usefulness and honor. What an army of martyrs does she already present for the respect and admiration of mankind! Amidst the eternal snows of mountain heights, in the awful solitudes that surround the poles, in the smothering damps of unfathomable mines, scorched and stricken down on the burning sands of the desert, poisoned by miasmas, stifled by the fatal gases of the laboratory, wasted by long toil over the intricate and wonderful structure of the human body, the sons of science have bravely and nobly perished, that man might be brought into more intimate relations with that creation of which he has been made lord and master. Clothed now with the heroism and self-sacrifice which ennoble every great and good cause in which man can engage, science goes on from achievement to achievement, and will continue to go on until she reaches that boundary which is drawn between the human and the divine, and beyond which we "walk by faith and not by sight."

That this path lies before her, who can doubt? In the material world which lies all around us, in the earth on which we tread, and from which we draw our very existence, are constantly recurring phenomena, which have thus far seemed to

defy all human ingenuity to comprehend or control. But one by one they are explored, until what before was dark, seems illumined by a radiance almost divine. To all of us, for instance, has been brought home, the sad and sudden and distressing calamity, "the terror which walketh in darkness, and the destruction which wasteth at noon-day." Stricken homes and wasted fields are too familiar to all men. And man seems to have been powerless, thus far, in anticipating or preventing the ravages of contagious diseases and epidemics, or of destroying the swarms of destructive insects which invade his crops. And now Mr. Huxley steps forward and declares: "It is at present a well-established fact that certain diseases, both of plants and of animals, which have all the characters of contagious and infectious epidemics, are caused by minute organisms. The smut of wheat is a well-known instance of such a disease, and it cannot be doubted that the grape disease and the potato disease fall under the same category. Among animals, insects are wonderfully liable to the ravages of contagious and infectious diseases caused by microscopic fungi." Now, rejecting entirely the idea that Mr. Huxley could even "expect to be a witness of the evolution of living protoplasm from the not living matter,"—and accepting the theory that the origin of pestiferous particles, even, "is to be accounted for by the ordinary process of the generation of like from like,"—may we not believe with him that the nature and cause of many a scourge will be one day as thoroughly understood, "as is now the microscopic organism of Pèbrine, and that the long-suffered massacre of our innocents will come to an end?"

It is indeed a consolation to us to know that microscopic investigation has revealed the fact that many contagious diseases, which have been more destructive than war and famine, "are dependent for their existence and their propagation upon extremely small living solid particles," which, if they are parasites, "may be stamped out by destroying their germs." The destruction of these germs for the prevention of contagious diseases among men and domestic animals, and the employment of parasite germs for the destruction of insects injurious to vegetation, present to the practical scientist vast opportunities for useful exploration, and for actual service to mankind, which would be forever held in grateful remembrance. It is in such

service as this that science has achieved one of her most brilliant modern victories, for an account of which we are indebted to Mr. Huxley in his fascinating essay on the "Origin of Life." A peculiar epizootic disease attacked the silkworms in France, about the year 1853, and threatened to destroy the great silk-producing industry of that country; involving a loss of thirty millions sterling to the silk-grower, and overwhelming with poverty and distress, a vast population employed in the most important manufacturing towns. After many unsuccessful investigations into the cause of this disease, M. Pasteur commenced a scientific exploration which determined the cause and provided the remedy also; and in the performance of which Pasteur added his name to the long list of those who have sacrificed themselves for the benefit of mankind. He discovered that this devastating disease "is the effect of the growth and multiplication of the panhistophyton in the silk-worm; that it is contagious and infectious, because the corpuscles of the panhistophyton pass away from the bodies of the diseased caterpillars, directly or indirectly, to the alimentary canal of healthy silk-worms in their neighborhood; that it is hereditary, because the corpuscles enter into the eggs while they are being formed, and consequently are carried with them when they are being laid; that it is an independent organism, which is no more generated by the silk-worm than the mistletoe is generated by the oak, or the apple-tree, on which it grows, though it may need the silk-worm for its development, in the same way as the mistletoe needs the tree." "Guided by this theory, he devised a method of extirpating the disease, which has proved to be completely successful, wherever it has been carried out."

Encouraged by this success of M. Pasteur, what may not the agriculturist expect from that alliance between himself and science which has been established during the last quarter of a century. Not that science will ever enable the farmer to shut his eyes to those great influences of nature, which the hand of man cannot reach, which no investigation can fathom, no human power guide; not that it will enable us to control the skies and the seasons; not that it will ever invade that unexplored region, where lie the strange forces which we all, philosopher and farmer alike, admire, obey, and leave with the good God who

made them ; but that we may discover and remove the causes of disease in our soils and our animals ; that we may make war upon the insects which ravage our fields and orchards, with some more potent agency than our hands and implements ; that we may rescue our crops from those maladies which seem to put a limit to their very existence on the earth ; and that both visible and microscopic organisms will one day be destroyed by antagonistic organisms controlled by man. That this is expecting too much of science, I cannot for a moment believe, supported as she may be by an accumulation of appropriate facts, and guided by accurate experiments.

And now I turn for a moment, with the deepest interest and the most profound respect to that struggle which science is making to enter the great domain of social and civil economy, and to establish fixed laws by which society and the State may be guided and elevated. Met, as she is, on the very boundary of this domain by every variety of human taste and necessity, by a great diversity of social and civil organization, by all the various opportunities and obligations which attend the geographical divisions, the mountains, and plains, and sea-coasts and islands, by a thousand industries new and old, and by all the established systems of society and State, every one of which virtue irradiates and vice deforms, her task becomes at once difficult, her temptations great, her dangers imminent. If there is any field in which she is to exercise the soberest judgment it is here. If there is any investigation in which facts are to be collected, arranged and weighed, it is where the prosperity, and happiness, and elevation of the human race are concerned. The soundest political philosopher is he who, gathering together all those causes of prosperity, general, diffused, and attended by popular virtue, which history provides, accepts the lesson which they teach, and promulgates the laws which they indicate ; not he who starts with his theories, and bends to them his facts. That virtue and morality attend general prosperity, no one can deny ; that vice waits upon poverty and idleness, is too true, and too sad ; and recorded facts may teach us what has developed the one, and in consequence suppressed the other. If the record of executive power, here or elsewhere, points to encroaching dictation ; if the history of legislative action is nothing more than the annals of corruption ; if the chapter of civil

service is black with incompetency and dishonesty ; it is indeed time that political science should organize a State more worthy of a free and enlightened people. If, under any system, the capital of our country has been scattered, and the labor of our country has been beggared and oppressed, let political science proclaim its reform at once. But let us, at any rate, look at things as they are.

For one I accept American facts as the foundation of American theories of public policy. A century of American nationality has its useful and encouraging lesson, of which we all may be proud, and from which we cannot turn in hopes of being taught a better. We have arrived at a system of government in which human equality is recognized ; and in which industry, intelligence and morality are considered the attributes of good citizenship. We have reached a degree of prosperity, and wealth, and social comfort, and elasticity, and vigor, in which all may share, unknown in all its characteristics elsewhere on the face of the earth. Making this a standard of political science, I am ready to accept it, both as a guide for the future, and as the law of American nationality laid down by the fathers, who believed in American citizenship as an opportunity for human development, and in American industry as the vital force of our own country, an example for others to follow, and in no way to be guided and controlled by inferior, and as we think, less humane systems. We have learned much by our own experience as a nation ; more than by the experience of others. Let this, then, be the foundation of American political science.

To that scientific thought which never tires in its explorations, and which may find its problems in every sphere in life, we submit our material welfare, relying upon the wisdom and integrity which now lie at the foundation of all its true success. And wherever the fraternity of philosophers inspired by this thought may turn their vision, whether to the heavens above, or the earth beneath or the waters under the earth, to our firesides or our public councils, there may they learn those laws of nature and of society, a knowledge of which may ennoble and purify the work committed by the Father to his children here below.

The Board then adjourned *sine die*.

ANNUAL REPORT OF THE COMMISSIONERS ON CONTAGIOUS DISEASES AMONG CATTLE.

To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.

Complying with the requirements of the statute, the Commissioners on Contagious Diseases among Cattle herewith present their Annual Report.

At the time the report for 1870 was presented, a contagious disease known as epizootic aphtha was prevailing quite extensively in the State, and causing much alarm to cattle owners and the public. All the then ascertained facts in the case and the measures which the Board had instituted to check its dissemination, and, if possible, eradicate it, were fully stated in that report. To meet the emergency and enable us to proceed in our work, the legislature, quite early in the session, made an appropriation of five thousand dollars. At that time circulars had been sent to all the cities and towns of the State, notifying their municipal officers of the existence of the disease in various sections; that the market yards of Brighton, Cambridge and Medford were unsafe localities; that it was forbidden to drive to those markets store cattle, milch cows or working oxen; and calling their special attention to the law which prescribed their duties in such an emergency.

To make our regulations effective and to assist the local authorities in this work, on the 12th of January Mr. Edward R. Craig, of Brighton, was appointed inspector of the cattle markets in the vicinity of Boston, and was instructed to stop all cattle being driven to or from those markets, except healthy beef cattle to be driven to places of slaughter. At the same time the several railroad corporations were forbidden to take upon their cars or to transport any but that class of cattle. Notwithstanding the thorough enforcement of these stringent regulations, the consumers of our cattle products were greatly alarmed for the public health, and the consumption of beef and milk decreased to such an extent as to disarrange and seriously affect the trade in those products. The measures of the Board were intended to and did protect the community from the consumption of unwholesome articles of food, and the alarm was groundless. Yet, to give the public confidence and relieve the

trade of its embarrassments, on the 19th of January, a statement of all the facts in the case was published, and a circular was sent to the towns from which milk was sent to market, directing the authorities to appoint inspectors in their several localities, with instructions to enforce the existing regulations and see that no milk was sold but that of perfectly healthy herds.

The disease was introduced here insidiously, and, by the movement of cattle in the usual course of the trade, it was widely disseminated before its nature or hardly its existence was known to the Commissioners or our stock owners. But the perfect isolation of all diseased herds, the prohibition to the driving of cattle in all infected neighborhoods, and the absolute interdiction of stores, milch cows and working oxen from the distributing markets, at once checked its progress, and the short time required in ordinary cases for its incubation, development and recovery, enabled us to control it in the localities where it existed. But the eradication of the contagion, or the killing of the poisonous power of the virus in places infected by it, was a more important and difficult matter. It was found, during the winter, that the disease was in abeyance when the ground in infected inclosures was frozen, but the introduction of healthy cattle when the earth was softened by thawing, caused a new outbreak. This fact made it clearly apparent that if we would prevent this malady from becoming permanent here and annually inflicting the enormous losses it has occasioned in England and on the European Continent, some method must be devised to compel the perfect disinfection of all places where it had existed. To accomplish this object, on the 4th of March the Board prepared minute directions for the disposal and disinfection of everything which had come in contact with the sick animals or which could reasonably be supposed to be infected with the poison; which directions were sent to all our municipal authorities and the owners of our market yards, directing them to see that they were rigidly complied with, at the expense of the owners of such premises, and to report to this Board the accomplishment of the work on or before the 20th of April. At the same time notice of these measures was sent to all the railroad presidents of the State whose roads extended to the north and west, and they were required to disinfect thoroughly

all the cars which they used in the transportation of cattle, and all the places where they yarded and confined them.

During the winter, fat cattle from Albany and the West were allowed to be brought here and slaughtered to supply our markets, and no harm resulted therefrom; but on the arrival of warm weather, after much expense had been incurred in cleaning and disinfecting the cattle yards and drives of Brighton, it was found that cattle which were just developing the disease were being brought there from the yards at Albany. This fact proved that the market places of Albany were poisoned and that all our labors and regulations would be of no avail unless the proprietors of those grounds could be induced to coöperate in the work by cleansing and purifying their premises. Communications were therefore sent to them stating the facts in the case, and on the 20th of March the Commissioners visited that locality and had a conference with them on the subject. As the result of that conference was not satisfactory and the evil still continued, on the 30th of that month our cattle dealers were notified of the danger, and advised to follow the example of the traders of Rhode Island, by completing arrangements for supplying themselves with cattle from Chicago via the Grand Trunk and Northern Railroads, thus avoiding the infection at Albany. At the same time communications were sent to the lessees of the Albany yards and the superintendent of the New York Central Railroad, making a renewed statement of the facts and giving information of the purpose of this Board to prohibit all cattle which should go into those yards from coming into Massachusetts unless they were thoroughly disinfected.

The result of these efforts was to awaken those parties to the importance of the matter and secure their hearty coöperation; and on the 24th of April a communication from them notified us that their premises had been cleaned and disinfected with carbolic acid, and were believed to be perfectly safe and harmless. Through the operation of these various measures, the new developments of the disease, which occurred on the approach of the warm season, materially subsided during the month of April, and at the time of the reception of the news of the purification of the market grounds of Albany, there were no known cases of it in the Commonwealth. At that time

returns had been received from most of the municipal authorities within whose limits the disease had existed, that infected places had been purified and everything supposed to be capable of spreading the distemper properly disposed of. The Board being satisfied of the fact, all restrictions against the free driving and transportation of all kinds of neat stock were removed the first of May, and this important branch of our trade and thrift at once and with confidence resumed its accustomed channels.

This disease has for many years ravaged and scourged several European countries, causing annually an enormous loss of property, and is raging there at the present time with great virulence ; but not a case of it, to our knowledge, has occurred in this country since the 20th of last April, and it is to be hoped that it is effectually eradicated. If such shall prove to be the fact, the cost of carrying out the regulations of the Commissioners and the quite general interruption of the usual trade and profit of this business for a limited time, will be of no account when compared with the benefit of the results. It is a very noticeable and important fact that notwithstanding the continued prevalence of this contagion in England for many years, with the exception of a short period when the movement of cattle was prohibited in consequence of the existence of a more deadly plague, that it should apparently have been entirely suppressed here within six months of its first outbreak.

It is not impossible that our drier, warmer summer climate may have had some influence on its poisonous propagating and virulent properties, though we know of no record of cases abroad of greater malignity than some observed by us in the towns of Stow and Bolton. Whatever change, if any, climate may have produced in the type of the disease in other respects, its extremely contagious character was fully developed ; and that we have been able to control and suppress it is undoubtedly owing to the fact that we have laws framed to meet such an emergency. The wisdom of these statutory enactments has been abundantly demonstrated at two important junctures : first, in 1867, on the breaking out of the Spanish fever, and now, in the foot-and-mouth disease.

There is no reasonable doubt but that if such laws had existed here at the time the contagious pleuro-pneumonia was imported

among our herds, it might have been quickly controlled, and hundreds of thousands of dollars saved to the State. The peculiar efficiency of our statutes consists in the complete control they give the officers of the law over all the cattle of the State, to prevent their being driven from place to place, to isolate them when suspected of contagious disease, to direct all municipal officers, and to punish all persons who shall neglect or refuse to comply with the regulations of the proper authorities. The laws referred to apply only to "contagious diseases among cattle." Their existence costs nothing when our herds are not exposed to danger, but they enable us to act with great efficiency and promptness whenever an emergency arises.

Almost simultaneously with the appearance of this disease in our State it broke out in Rhode Island, Connecticut and New York. The cattle commissioners of the former States were in constant communication with this Board so long as it was in existence, and coöperated in the general measures for its suppression. By invitation of the board of New York, all the commissioners of the New England States met them in convention at Albany on the 8th of last February, "to concert measures for the eradication of the disease from the country." Much information was then obtained in relation to its introduction and dissemination in our respective States, but it was found that though New York, in consequence of its great distributing markets, was the most important point to attack the disease in the interest of the whole country; yet that State was entirely without laws for the suppression of contagious diseases among cattle, and its commissioners powerless to enforce any regulations for that purpose. In consequence of this, little was accomplished by the convention but to petition the legislature of that State to remedy the defect and ask the National Government to interdict cattle affected with this disease being brought into the country.

The legislature of New York failed to enact any statutes to meet the emergency, and the final extinction of the malady and the prevention of a new outbreak by disinfection, even in that State, is largely due to the measures of the commissioners of Massachusetts and Rhode Island, enforced by the very effective and stringent laws of these States.

Whatever of doubt and mystery was connected with the origin, importation and spread of epizootic apthæ in the State, existed at the time our last report was made, investigation has completely dispelled. Without giving publicity to the innocent and unfortunate party who was the prime cause of its introduction, it is sufficient to say that it was imparted to a single herd in Canada by an importation from England in August, 1870; and almost before its nature and results were known, it spread through several townships. Thence, by the transit of stock, it was carried to Albany and several of the counties of Eastern New York and Western Connecticut. From Albany, also, it was transmitted to Brighton, thoroughly poisoning the yards in that place, and by distributing cattle from that point it was disseminated among our home stock over a wide extent of country in this and the adjoining State of Rhode Island.

To ascertain, if possible, the exact extent of its dissemination in this State, the probable losses it has occasioned, and to collect information which might be valuable in any similar emergency in the future, the Commissioners, on the 4th of March, sent a communication to the proper officers of every municipality in the State requiring them to report to this Board, answers to the following questions, viz. :—"How many herds of cattle in your town or city have had the disease called epizootic apthæ, or foot-and-mouth disease?" "How many single animals in those herds have escaped it?" "How many animals in all have had it?" "How many have died from it, either directly or indirectly?" "From what source did the cattle of your town obtain it?" "What is the estimated loss or damage to the stock of your town by the disease?" Through the negligence or indifference of the authorities after the subsidence of the disease, only partial returns have been received to the circulars sent out. From those received, however, and from the personal knowledge of the Commissioners, it is certain that it prevailed to a greater or less extent in at least seventy-five towns and cities of the State; that it visited more than two hundred herds, and the number of animals which had it was upwards of three thousand, and the number in those herds which wholly escaped it was three hundred or about one in ten. In the eastern part of the State every case was traced directly to Brighton or to cattle which came from thence, and in the western, to cattle from

Albany. The number which died with the disease was twenty-seven or about one in a hundred.

Owing to neglect in making the returns, the exact extent of the losses it has occasioned can only be approximately ascertained. But from the data received we feel justified in saying that the losses by injury to the infected stock, the total interruption of some branches of the cattle and milk trade, and the inability to employ oxen as working teams during the prevalence of the disease, must have occasioned an aggregate loss to the community of at least a hundred and fifty thousand dollars. The expenses incurred by the Commissioners during the year, as shown by the auditor's books, is three thousand one hundred and fifty-seven dollars and sixty-nine cents (\$3,157.69). A part of this sum, though shown on the books of this year, was expended in 1870, on the occasion of the appearance of a singular malady in southern Berkshire, supposed to be contagious. Of the appropriation made by the legislature this year, one thousand eight hundred and forty-two dollars and thirty-one cents (\$1,842.31) remain unexpended.

EPIZOOTIC APHTHA, EPIZOOTIC ECZEMA, FOOT-AND-MOUTH DISEASE.

This disease first made its appearance in England in 1839, and it is generally believed to have been introduced from the Continent.

It has prevailed, more or less, since ; yet while restrictions were in force (during the prevalence of rinderpest), preventing the moving and traffic in cattle, foot-and-mouth disease and pleuro-pneumonia were almost totally unheard of, isolated cases only occurring. Since the restrictions were removed, both diseases have prevailed and great losses have been sustained.

The first known outbreak in this State occurred at Brighton, among a lot of cattle which were being fattened ; inability to eat, with a great flow of saliva, and lameness, were the symptoms. As they appeared to lose flesh rapidly, all were slaughtered and sent to market.

As the owners were ignorant of the nature of the disease, no precautions were taken. Other cattle were placed in the yards where the diseased had been kept, and sold to go to different places, carrying the malady which was contracted by being in those yards (in some cases but a few hours) wherever they went.

SYMPTOMS.

The symptoms of foot-and-mouth disease are usually well marked,—so much so that mistakes rarely occur. Either the animal is observed to walk lame, in many instances before vesicles appear on the surface, or is unable to eat, though apparently anxious to do so. In some cases, both the mouth and the feet are affected from the earliest appearance of the disease. Upon examination of the mouth, vesicles will be found on the tongue, roof of the mouth and inside the lips, the saliva flowing freely.

Upon the feet, immediately above the hoofs, either between the digits or on the coronary surface, and the skin of the heels, vesicles appear, burst and discharge foetid matter. In severe cases, the skin of the udder is affected; vesicles appearing, the gland itself becomes inflamed, abscesses form, and the animal is entirely ruined for milking purposes.

Occasionally, though rarely, cattle are found with both the mouth and feet in a diseased condition, which, to the ordinary observer, would appear to be affected with the disease in question. To the pathologist, it is distinctly different.

TREATMENT.

The more simple the treatment, in most cases, the better the result. For the mouth, a weak solution of alum, one part to twenty-four of water; for the feet, sulphate of copper (blue vitriol), one part to sixteen of water, and carbolic acid, largely diluted, applied alternately, and keeping the feet clean and dry, include all the treatment necessary in ordinary cases.

In answer to the question, Is there any liability to a recurrence of this disease? we quote from the "London Veterinarian," p. 203, 1861, the following:—

"Prevalence of Eczema Epizoötica."

"During the last four weeks, the so-called 'mouth-and-foot disease' has prevailed to a very serious extent among the cows of many of the London dairies.

"Several animals have died from irritative fever, deep cellular abscesses, etc., but on the whole the deaths have not been very numerous. Great numbers, however, have been rendered useless for milking purposes, in consequence of severe attacks of mammitis,

both as concomitants and sequelæ of the malady, thus taxing to the utmost the ability of the proprietors to furnish the required supply of milk to their customers.

"It is a fact, of great pathological value, that not only have *secondary* attacks occurred in several of the animals, but even *tertiary* in some few of them."

In the Second Annual Report of the State Board of Health, pp 426, *et seq.*, will be found an interesting article, describing the symptoms and progress of the disease in three persons, acquired by partaking freely of milk drawn from cows affected with the disease. In conclusion, the writer says: "In accordance with the general law that animal poisons are destroyed when subjected to a very high temperature, we are justified in believing that the affection can never be communicated to man through the medium of the meat, provided it be thoroughly cooked, and, upon the same principle, the milk might be rendered innocuous by being boiled."

In the "Lancet," 1869, in an article headed "Foot-and-Mouth Disease in relation to the meat and milk supply," is the following: "Boiling the milk has been recommended for the purpose of preventing or lessening its injurious action; but, as a matter of fact, it may be stated that boiling does not alter the appearance of the morbid elements, nor does it arrest the movements of bacteria in the fluid."

CONTAGION.

That the disease is highly contagious does not admit of a doubt. Cattle have become infected by being driven over the highway where diseased oxen have travelled. A single animal, which was purchased at Brighton, has carried the disease and infected a herd of fifty head. As with all contagious diseases, individual cases occur which are insusceptible to infection. A large steer, recently slaughtered, weighing over two thousand pounds, was daily turned into the yard, and drank the water from the same trough where infected cattle were supplied with water; he escaped. Is the milk of cows affected with "foot-and-mouth disease" healthy? The answer is, emphatically, no. From the limited time the malady existed in this State, little is known of the effects of using the milk of diseased cows. Chemical analysis, however, sufficiently demonstrates the fact.

Mr. Henry W. Vaughn, the milk inspector of the city of Providence, who is a practical chemist, has analyzed samples of the milk of cows sick with the “foot-and-mouth disease,” at different stages of the disease. The results of these analyses are very valuable in their relation to the character and progress of the disease, and are therefore deemed important to be given here.

The following table shows the results of four analyses. No. I. is the analysis of the milk from a cow in the worst stage of the disease. No. II. is milk from the same cow seven days later. No. III. is milk from a cow three weeks after the first symptoms of the disease were seen. No. IV. is the average results of the analysis of thirty samples of milk from healthy cows :—

	I.	II.	III.	IV.
Reaction, . . .	Strongly acid.	Slightly acid.	Alkaline.	Alkaline.
Water, percentage,	91.038	88.710	85.80	84.71
Solids, percentage,	8.962	11.290	14.70	15.29

The solids consist of—

Caseine, . . .	5.430	5.540	5.03	5.29
Fats,	2.30	2.88	4.70	4.96
Sugar, . . . .	.542	2.13	4.13	4.23
Salt, . . . .	.69	.74	.75	.81

Mr. Vaughn says: “In sample No. I. the caseine was coagulated, occupying about fifty per cent. per volume. Under the microscope, there were but few fat globules, of irregular shape, and blood globules were disseminated through the mass.”

The analysis of sample No. I. shows a very serious disorganization of the normal constituents of the milk. The sugar is converted to acid, the percentage of water is largely increased, the proportion of fats is much diminished, while the appearance of blood globules indicates serious trouble.*

* Report of Rhode Island Cattle Commissioners.

During the prevalence of the contagion, applications were frequently made to the Commissioners for remuneration by the State for the various losses which individuals had suffered by it, showing a great misapprehension in the community respecting the powers and duties of the Board, and the purpose for which it is appointed. The law creating and defining the duties of the "Commissioners on Contagious Diseases among Cattle," was clearly intended to guard the community from the spread of contagious disease, and ample power was given the Board, so that in extreme cases, if it was necessary, in order to stop contagion, healthy but infected cattle might be slaughtered at the expense of the State; but not to pay for cattle dying of disease, the expenses of their sickness, or the incidental losses it might occasion. Entertaining this opinion, the Commissioners have refused any remuneration to sufferers, though their losses have been disastrous. With the exception of the disease referred to, the herds of the Commonwealth have, during the year, been healthy, and our great interests in cattle and their products have been prosperous.

LEVI STOCKBRIDGE,
E. F. THAYER,
H. W. JORDAN,

Commissioners on Contagious Diseases among Cattle.

Boston, Dec. 29, 1871.

ANNUAL MEETING OF THE BOARD.

The Board met at the office of the Secretary in Boston, on Monday, the 5th of February, at twelve o'clock, His Excellency, Gov. WASHBURN, in the chair.

Present—Messrs. Allis, Baker, Bradford, Bucklin, Davis, Fearing, Goodman, Hubbard, Hyde, Johnson, Knowlton, Ladd, Loring, Moore, Peck, Saltonstall, Slade, Stockbridge, Stone, Ward, Washburn and Wilder.

The records of the last annual meeting were read and accepted.

Messrs. Wilder, Saltonstall and Goodman were appointed a committee upon the order of business.

On motion of Mr. Davis it was

Voted, That upon all hearings upon applications for a change of time for holding Annual Fairs of an Agricultural Society,

the committee shall notify the delegates of all societies in the county, and of other societies whose fair is held within twenty miles.

The committee on the order of business then submitted the following

R E P O R T :

1st. Reports of Delegates to county exhibitions.

2d. Reports of Committees on subjects assigned for essays.

3d. Report of the Committee on the Agricultural College.

4th. Miscellaneous Business.

5th. Appointment of Delegates.

The sessions to begin at 10 o'clock, A. M. of each day.

The Committee also suggest that the committees on the selection of subjects for essays and on the annual country meeting be appointed on Wednesday morning.

(Signed)

MARSHALL P. WILDER.

LEVERETT SALTONSTALL.

R. GOODMAN.

The report was accepted.

The reports of delegates being in order, Mr. Stone submitted a report upon the Middlesex Society; Mr. Allis upon the Worcester; Mr. Hubbard upon the Worcester North-west; Mr. Vincent (read by the Secretary) upon the Highland; Mr. Allis upon the Hampden; Mr. Johnson upon the Worcester North; Mr. Ward upon the Bristol Central; and Mr. Hyde upon the Hampshire.

Mr. Fearing also made a highly interesting verbal statement upon the exhibition of the Hingham Society.

After the transaction of some further business the Board adjourned.

S E C O N D D A Y .

The Board met at ten o'clock, A. M., on Tuesday, His Excellency, Gov. WASHBURN, in the chair.

Present—Messrs. Allis, Baker, Birnie, Boise, Bradford, Bucklin, Converse, Davis, Ellsworth, Fay, Fearing, Goodman, Hubbard, Hyde, Johnson, Knowlton, Ladd, Loring, Moore, Peck, Phinney, Plunkett, Slade, Stone, Stockbridge, Ward, Washburn and Wilder.

Reports of delegates being in order, Mr. Ellsworth presented a report upon the Essex Society ; Mr. Peck upon the Middlesex North ; Mr. Bucklin upon the Worcester South-east ; Mr. Goodman upon the Bristol ; Mr. Knowlton upon the Hampshire, Franklin and Hampden ; Mr. Brown upon the Hampden East ; Mr. Ladd upon the Berkshire ; Mr. Converse upon the Housatonic ; Mr. Baker upon the Union ; Mr. Stockbridge upon the Franklin ; Mr. Slade upon the Hoosac Valley ; Mr. Fay upon the Norfolk ; Mr. Birnie upon the Plymouth ; Mr. Boise upon the Marshfield and Mr. Phinney upon the Nantucket.

Mr. HUBBARD was appointed a committee on the credentials of new members.

Mr. ELLSWORTH then submitted the following essay upon the

MANAGEMENT OF THE DAIRY.

Of the different branches of farming, the dairy unquestionably ranks first. The same might have been said of it fifty years ago. We can hardly understand as we look over the State and observe the many deserted farms, and barren acres, how this interest, to-day, holds a place second to none in the long list of agricultural pursuits. In the time of our fathers, our farms were rich in natural fertility, and supported large herds without resorting to artificial helps, and yet, although our lands have depreciated in agricultural value, dairy farming has not only held its place as first, but has actually increased in extent and importance nearly twofold since those days. Such is the fact, however, astonishing as it may seem, and of the many reasons to which to ascribe the remarkable growth, there are at least three prominent ones.

1st. The improvement in dairy stock and the management of the same. This is a more important reason than we can realize. It has affected the whole dairying interest by giving us better machines, so to speak, with which to work, and by throwing around this pursuit a sort of fascination, which has led the dairyman to take a deeper interest in his calling. Instead now of the large herds of scrubby native stock without pedigree, and whose physical qualities could never be predetermined, we have our grades and pure-bred cattle with a well-defined pedigree, showing their descent from animals whose characteristics were marked and well developed. What would the dairyman

do without his carefully bred animals, without his Shorthorns, or grade Shorthorns, his Ayrshires, Devons or Jerseys, or crosses effected between these breeds? Without them, however hard he might labor, we fear his efforts as a dairyman, would be attended with little success.

In relation to the management of dairy stock, that indeed has undergone a decided change. The farmer of to-day, who is feeding his herds as his fathers did, is either an unmitigated conservative, ignoring modern discoveries, or else is an inactive, shiftless man, with hardly sufficient life and enterprise to care for his faithful herds, and much less to make improvement in his treatment of them, and so not only doing a valuable service to them, but materially benefiting himself. The management of dairy stock has been so much improved within the last twenty-five years, that it holds an important place in its effect on the development of dairy industry in this country; in fact, we doubt if there has been another influence more potent in its growth than that of the improved management of the dairy cow.

2d. The manufacture and marketing of dairy products as influencing the growth of the dairy. The improved methods of manufacturing butter and cheese, and the facts and discoveries wrought out in relation to the same, have all played their special parts. The introduction of the cheese factory, one of the greatest blessings to the farmer and his family, has no doubt greatly influenced the development of this branch of dairy farming, while the improved methods of gathering cream and churning the same, in a measure lightening the labor of the dairyman and increasing his profits, have done much to advance the growth of this department of the dairy. As to the facilities of marketing dairy products, only a word need be said. They, of course, have held the same relation to the development of this interest as to every other interest in the country. The great facilities of travel, coming as they do to almost every farmer's door, have affected this calling as much as any other in the land.

3d. The last and most important cause to which we credit the rapid development of the dairying interest in this State, is the increase of population, which has created a greater demand for dairy products. If the demand for these increase two-

fold, the supply will increase in the same ratio. Although the State does not furnish the whole of this supply, and probably never will, as other States are constantly sending in, still a growth in population will produce a corresponding growth in dairy farming. More especially, however, will an increase in the population affect that department of the dairy known as milk-farming. Nearly all of our large farms in the vicinity of large towns and cities have already been converted into milk farms, and eventually, we believe, the principal dairy farming in this State will be that of producing milk for home consumption, and consequently, will be carried on in the neighborhood of chief centres of business.

We come now to speak of the cow herself. In this important branch of farming she plays the most prominent part, and too much cannot be said in her praise. Is there a more gratifying sight in our daily life than the dreamy, good-natured cow,—perhaps the property of some poor family who are dependent, in part, upon her for their support,—after she has completed her day's work and is quietly waiting for some one to draw from her a bountiful supply of one of the richest and purest delicacies ever furnished to man? Is there any animal that commands our respect to a higher degree or to which we should feel more grateful? We read that the ancient Egyptians used to worship the bull, but if our devotions are to be paid to any brute, is not the cow more deserving of this tribute? The bull was revered as a symbol of productiveness, yet how much more should the cow be revered, for she not only produces, but rears her own young, and at the same time helps to rear the young of the human family. She gives us veal, milk, butter and cheese, and finally yields up her own body for beef. The number of different varieties of food for our nourishment and gratification, that milk enters into, as an essential part, it would be difficult to determine. It has been found by careful scientific research, that one pound of cheese is equal, as an article of diet, to two pounds of beef; and an experiment made in France about ten years ago, proved that it cost no more to produce three pounds of cheese, than one pound of beef. But whether this is so or not, there is no doubt that the cow is the most useful to man of all the domestic animals. Therefore, the selecting, raising, managing and feeding of the dairy cow,

as well as the best methods of disposing of her products, are of no small importance to the farmers of Massachusetts.

MANAGEMENT OF THE DAIRY.

We do not propose to speak of the different breeds of cows, nor to select any one as best adapted for a special purpose. There are, at least, half a dozen different breeds in the State, some of which are specially adapted to the wants of the farmer in one locality, while others would be equally good and perhaps better in other sections.

The good qualities of the different breeds have been so often discussed in the agricultural papers and elsewhere, that we presume farmers generally have selected such as best suit them for that branch of dairy farming which they wish to follow. But the general management of the different dairies is or should be nearly the same in all. We believe there are very many intelligent farmers in this State who do not manage their dairies, as to raising, feeding, &c., as they should. Much depends upon the management of the young heifer whether she makes a good or a fair dairy cow. A heifer can, by careful treatment, be taught to be a good milker.

We are told that the cow, in its natural or wild state, barely gives milk enough to raise her young; and there are certain herds in this country where size and form are especially sought for, that will do but little more; while at the present time, there are cows in our midst that give twenty to twenty-four quarts per day for a considerable time during the best of the season. But this improvement is brought about only by skilful management.

To raise a good cow we should first select a calf from a well-bred mother that is fully matured, say from three to nine years old, and known to be a good milker. The father should be thoroughbred, not less than two years old, and descended from a good milking family. We should prefer the calf to be an early one, not later than March, and if earlier it is better. By being early the calf gets a good start in the spring, and will, if well cared for, come to the barn in the fall, large, strong and healthy, and will usually come in when two years old and make a good-sized cow.

There is nothing so good for the calf as new milk, either

taken directly from the cow, or drunk. But few farmers can, however, afford to bring up a calf wholly on new milk.

We have practised raising calves by allowing them to suck the mother about four days, then teaching them to drink, which is easily done, with new milk. Let the calf lose one meal from the cow, and it will almost invariably drink, when the milk is offered. It should have new milk until fifteen days old, then this can be mixed with an equal amount of skimmed milk or oatmeal porridge. Care should be taken not to feed too much; four quarts is enough to give at once. We should try, also, to teach it to eat early-cut hay, roots, oats and shorts. In this manner the calf will grow *straight* and *healthy*. It is wrong, however, to allow a calf to drink a large quantity at a time of anything. Calves can be raised upon hay-tea, porridge, &c., without any milk, but we think that if a farmer is so situated that he cannot afford a calf new milk one week, then one-half skim milk until it has a stomach sufficiently strong to digest more solid food, he had better buy his cows rather than raise them. A heifer should be kept thriving until she comes to milk, and if possible she should drop her first calf while in the barn, or just before going to grass, as there will be less danger of having trouble with the udder. After well in milk, she should be liberally fed, carefully and regularly milked until near her next calving time. By such treatment, if she is of good blood, she will generally make a good cow and hold out well. Heifers should be frequently handled and petted from calves; then they will be more easily handled for milking.

The milch cow should be gently and carefully treated, and should have her wants as fully supplied as may be at all times of the year. Although she should be allowed to go to the ground as soon as practicable in the spring, yet she should not be permitted to run upon the summer pastures until they can afford her a good supply of food. It is poor economy to allow herds to roam all over the pastures clipping the young and tender grasses before they yield much nutriment.

When the change is made from hay to grass it should be done carefully and gradually; the cows should have a foddering of the best hay twice a day as long as they will eat it; if extra feed has been given it may now be discontinued.

In order to keep up a good flow of milk a constant supply of

food suited to the wants of the cow must be given, and care must be taken to provide against the falling off of this supply as the pastures dry up. It requires a certain amount of food to support nature. All above this generally goes to make milk, or beef if the animal is not in milk. The cow, therefore, should not be allowed to shrink her milk early in the season for the lack of a sufficient amount of food to make it. What that supply shall be every farmer has a preference. I plant southern and sweet corn and cabbages as well as sow millet, grain and flat turnips, endeavoring to have them succeed each other as they are required by the cows. I have never, except in two instances, during the past fifteen years, put in a soiling crop, without having a special call for it before winter. These so-called green crops, I always feed in the barn, with the exception of the flat turnips which I pull and strew on the grass ground, immediately after milking. Turnips fed in this way will impart no unpleasant flavor to the milk or butter.

The most satisfactory way of salting cows, with me, is to give about a dessert spoonful each morning, while giving green or summer feed. This amount they will always eat with good relish. In winter, instead of salt alone, I feed twice a week with salt, plaster and wood ashes mixed in equal parts, a table-spoonful at least.

MILKING.

It is of the greatest importance to the dairyman that the milking should be done in a proper manner and at regular intervals. If the cow is kindly treated she will give down her milk with pleasure; but if roughly used she will hold up some part of it, and the quantity will gradually diminish till it will hardly pay for milking. Everything should therefore be calm and quiet about the milking stable. The milker should sit down to the cow with the pail in his left hand; commence brushing the udder and teats with the right, carefully for a few seconds. In this way the udder and teats will become clean, and the cow will be ready to give down her milk and no time will be lost. Then commence the operation by shutting the upper part of the hand close to the udder, gradually closing it towards the end of the teats; repeating without any twitching or jerking until clean.

In summer nights the cows may be stabled or allowed to run

in the pasture according to the choice of the dairyman. We choose, however, to let them run on the same pasture night and day, changing pastures often. When the nights become cool, they should be stabled and fed regularly. The stable is best situated on the south side of the barn, well lighted, and with suitable means for ventilation. We prefer to fasten milch cows in stanchions, for various reasons: it is quicker, neater and safer, and when they are accustomed to lie in them, they appear perfectly comfortable. Calves and heifers should be fastened with chains, because, when their horns are soft, the stanchion will often cause them to grow crooked. The floor planks on which the cow lies should be of such a length that when she is down her whole weight will rest upon the platform. This platform, for a large-sized cow, should be four feet nine inches long, but slightly inclined, and raised six inches above the trench. When fastened with stanchions upon a raised platform of suitable length, it is very little trouble to keep animals clean. If one prefers to fasten with chains, the floor must be longer in order to keep them clean, as they change their position so often. For bedding we should recommend the free use of sand when it can be obtained. Experience has shown that it rids cattle of vermin, and moreover it is of great value in the manure pile, especially for a clayey soil.

In relation to the construction of the manger it may be proper to say a few words. The general rule for our guidance, however, in its construction, should be to promote the comfort of the cow in eating from it. To accomplish this the floor should be raised about two inches above the platform on which the cow stands, thus preventing all reaching for food, and from slipping and falling upon the knees.

WINTER FEEDING.

Having considered what we think to be the proper method of raising the cow from the calf, and of tying her up, and having spoken of the floor upon which she stands, and the manger from which she eats, we properly come now to consider her food and the manner of feeding it. It is not so much the kind of food, or how we prepare it, as the *method of giving it*, that we are to consider. In regard to the preparation, however, some recommend very highly steamed feed, and claim it to be a great

saving of fodder ; others give cut feed with equal satisfaction ; while still others claim that the common dried fodder properly fed is the most economical when the cost of steaming or cutting is taken into account. Whether the steaming of food is a saving or not, we feel sure that it cannot come into general use on account of the expense of getting and arranging the necessary fixtures. The same in regard to expense is true in relation to the cutting and mixing of feed for stock. Although but a few fixtures are required, yet it takes much labor ; the labor we employ is generally of so poor a quality and yet so expensive to hire, that the less we needlessly employ, the more successful will be our farm operations. I have formerly given cut feed to considerable extent, and have concluded that it is considered a saving because it is fed in less quantities and with more regularity. Now, when a farmer is convinced that he can make a saving without extra cost by adopting a different method from the one he has generally followed, he is not very slow to try the experiment.

The course which I pursue in feeding I adopted twelve years ago. It has been styled the " Barre system," and the credit of originating it has been given to me. I liked the system so well, and my stock did so much better than before, that I began to tell my neighbors about it, and the per cent. of fodder which I was confident I had saved. Some hardly believed me ; but as hay was very high that season, they began to try it, and thus it was adopted. I remember, about ten years ago, of taking a long ride with one who was then, as he is now, a member of this Board ; and as we drove slowly along through the mud, I told him how I fed my cows. The system seemed to strike him favorably, for he not only immediately adopted it himself, but from that time, whenever and wherever he has spoken about feeding stock, he has recommended this system which I then related to him.

The system of winter feeding, as we have practised it, is as follows : The poorest quality of fodder that I wish to feed is given first, at the beginning of each meal, and in the morning, while the cows are eating this first foddering, I commence to milk. By the time they have this two-thirds eaten, another foddering is given them of a better quality ; and then the third, which consists of the best hay which I intend to feed, is given

as before, or just previous to the finishing of the second foddering. By feeding in this way the cows are kept constantly eating, and will consume all that is placed before them, leaving nothing eatable in their manger. I then sweep out and am ready to feed roots, meal, &c., which are given immediately. Then commence to water by letting out only a few at a time and seeing that all have a chance to drink,—thus allowing little or no time between eating and drinking. The stable is then cleaned, and they are returned as soon as they have drunk. They have nothing more to eat until their afternoon meal, which is commenced at about half-past two o'clock, by feeding, watering, &c., the same as in the morning, with the exception of the roots and meal, which are all given at one time, and that in the morning. I milk at night after watering. Nothing is fed after watering, either morning or evening.

By this method the cow has had two good meals, has drunk twice, and has at least sixteen hours out of the twenty-four in which to rest and quietly chew her cud. A stock of cows thus tended will eat one-half coarse or poor quality of fodder, with the rest of good hay and a very little grain, and keep in good health and flesh, giving at the same time a good flow of milk. When I have plenty of hay and rowen, I feed very little grain, but now, since we have had short crops of hay, I use more meal. For a milch cow I feed one quart of Indian and one quart of cotton-seed meal and two quarts of shorts, with six of sliced roots. This will make a good flow of milk without doing injury in any manner to the cow. But if my object is to make beef and milk at the same time, I increase the Indian meal according to the size and capacity of the cow.

When we tell a farmer, who feeds three meals a day, that his cows would do better with but two, he can hardly believe it, especially when he eats three times himself. Judging of the wants of a cow from our own, we can readily see why she appears to want three meals a day after she has acquired the habit of eating her daily food at three different times. Now if we are convinced that this is a wrong habit, and feel sure that we know a better one, should not this better one be substituted? A cow will drink more heartily as soon as she has eaten a full meal of dry fodder than she will after she has begun to chew her cud. After a cow has finished eating, it is natural for her to chew

over this food, to extract the nutriment from it. It is undoubtedly right that she should have sufficient time to do this. If three hours is enough to accomplish this, she should then be fed again; but if not, why not wait until she has finished? A well-fed cow will chew her cud continually for six hours if she is not molested; but should she be offered a good foddering of hay in three hours from the time she was last fed, she will eat it.

The point for us to settle here is, whether the cow is better off for being fed in three hours, or to wait six, until she has finished chewing her cud, before she is fed again. I believe that she is better off not to have any food offered her for six hours, or between the morning and afternoon meals. If a man, now feeding a cow six pounds of the best hay and two quarts of meal three times a day in any form, will try feeding the same amount in two meals, or nine pounds of hay and three quarts of meal dry, at a time, giving what water the cow will drink directly after eating, continuing the trial for two weeks, he will be able to decide for himself whether two meals is as good or better for the cow than three.

A long experience, with a careful study of the wants and habits of the dairy cow, has convinced me that she will consume the same amount of fodder in less time, will drink more, and be better filled up, keep in better condition, with less care, and give more milk, than when fed three times.

If I had but one, or only a few cows, I would give all I wished to feed at one meal or one foddering, but, for a large herd, I should prefer to give this meal in three fodderings. The length of time required to feed varies according to the kind of food we are giving. When it is all good hay, it will be eaten in less time than when a part is of a coarse or poor quality, but in either case the cow will eat with a good appetite. As a rule, I would say, two hours is sufficient for one meal, or two and a half in the morning and one and a half in the evening. More time is required in the morning, as the roots and meal are fed at this time. My reason for feeding these in the morning is because there is a much longer time between the evening and morning meals, and the cow is therefore in a better condition to eat a richer and heartier meal.

If a cow, after becoming dry, loses flesh, as she sometimes does before calving, especially when the calf is a male, and the

cow a little thin, I feed one or two quarts of meal a day. When there is a great draft upon the system, as in the case above mentioned, oatmeal, I find, is a great help in restoring it.

The idea that a cow needs only two meals a day during the winter season, or as long as she is kept upon hay or other dried fodder, notwithstanding the fact that she will eat much oftener when obtaining her living from the pasture, may appear, to the casual observer, to be contradictory to itself; but, on a closer investigation, we shall notice a rational, and, I believe, satisfactory, reason for it. Of all the elements of which grass is composed, by far the larger part is water, which must render it much more bulky than an equal amount of hay, and for this reason more is required to supply the wants of the system. During the season, therefore, when the cow must live by her own exertions, she must labor most of the time to obtain the requisite amount of nourishment, which she is not required to do while in the barn. We must not forget, also, that pastures, in general, are kept down so close, during the greater part of the summer, that only by continual labor can her wants be satisfied.

ROOTS.

It seems to me that we can hardly call a man an intelligent farmer, or a good dairyman, who does not raise an abundant supply of the different varieties of roots, for his cows during the winter months, when they must live for the most part upon dry food. We all know and fully realize, how important vegetables are, as a part of our own diet, and is not this equally true when applied to the condition of our animals?

CARDING.

This operation is a great treat to a cow, and as much so, perhaps, to every dairyman who enjoys seeing a dumb animal happy, while no one can help noticing how impatient each cow becomes in waiting for her turn. This should not be neglected for a single day, while the herd is confined in the barn. This duty is more often overlooked by the farmer than any other.

DRYING OFF A COW.

The manner of drying off a cow so that her udder may remain uninjured, and in suitable condition to yield a good sup-

ply in the future, is of great importance. A great milker is more often troubled from this cause than an ordinary one. Drying may be most successfully done when the cow is within about nine weeks of calving, as before this time she gives too much milk; while later than this she has commenced to increase her flow to supply the calf. When I commence to dry off a cow I give a poorer milk-producing food, as well as a scanty allowance, until the flow of milk is checked, which generally requires about five days. The udder must be watched closely and should the milk become thick, or clotted, it must be frequently removed, but as soon as it becomes thin and watery in all the teats, all is well, thus leaving about five weeks in which to recruit her system.

CARE DURING TIME OF CALVING.

The most watchful care is required during time of calving, while experience and judgment are of great importance. More trouble is to be feared from an extra good cow than from an ordinary one. When a cow is expected to calve she should be placed in a comfortable stable, well protected against drafts of air, with plenty of bedding, and the herdsman should know her exact condition every hour until she calves. Soon after calving we give a pailful of water slightly warm, into which a pint of rye meal has been stirred, water often for the first twenty-four hours, warm as at first, but never give more than a pailful at a time. Only a small amount of fodder should be given during the first twenty-four hours and no grain in any form for at least four days or a week. A few roots, however, will be beneficial. The cow and calf may be kept together, for a day or two. When the calf is suckled, it should be changed from one teat to the other, as young calves will hang to one teat altogether, sucking and bunting so hard as to injure the udder, and in this way one teat will often be injured by the calf, thus lessening the flow of milk in that quarter of the udder. If at the end of one week all appears to be well, we gradually increase her feed. Trouble is easily avoided by watchfulness and care in season. When a cow has a swelled udder with high fever in it I don't allow the calf to suck, but keep her in the stable, giving her only warm drink, feed sparingly, bathe the udder often, with quite warm soap suds, and rub carefully with the hand

until dry, then apply lard, rubbing very gently. I have never failed of success, even in the most extreme cases. The above applies, more especially, to what we call great milkers as with ordinary cows, we seldom have any trouble.

PRODUCTS OF THE COW.

There is probably no way to dispose of milk so profitably, provided a fair price can be obtained for it, or exchange this product of the cow so quickly into ready money, as by selling it by the can. By this method of disposing of milk it is unnecessary to keep swine. Next to selling of the milk the making of cheese by the factory system, may be called the most desirable, all things considered. While the selling of milk may be called the easiest, the making of butter certainly requires the most attention and care. We cannot expect a prime article, unless the closest attention, together with good judgment and plenty of work, is bestowed upon it. While the principle that the demand governs the supply, is true of nearly all branches of trade, we can hardly apply it to that in choice butter. For such, the demand is always greater than the supply, and is ever on the increase. We cannot, therefore, afford to make poor butter. The market calls for nothing but the choicest, and such alone we must make, if we would follow this branch of dairying with success. In glancing over the columns of our agricultural weeklies, how often do we notice an inquiry amounting to this: Why is there so much poor butter and so little prime or "gilt-edged" in the market? Why is it that so few dairymen can make that quality so much demanded? This they call a mystery. It is no mystery to me. The quality has been sacrificed, for the most part, by want of care and watchfulness. Not one of the many neat and careful processes can be neglected nor even slighted. Every one must be done at the proper time.

I have noticed many articles upon the general subject of butter making. One, perhaps, upon the temperature of the milk room; another as to the temperature of the cream, for churning; and others upon the amount of milk required to make a pound of butter. Some give the amount as eight quarts, others as nine, and some go as high as sixteen, but all fail to state whether this is a general average of their whole dairy,

or the milk of a particular cow ; whether all the milk is taken or only the last strippings. Such experiments can be but little relied upon. We can arrive at no satisfactory result unless the tests are made with care, and when reported, it should be done minutely and correctly.

For many years I have followed cheese making, considering it the best way to dispose of my milk, but during the past year I have turned my attention to the making of butter, and, during every month, I have given my personal attention, to the making of many careful trials and noting minutely the results. Although it is easier to make butter in some parts of the year than in others, yet it is generally thought that a prime article *cannot* be made in winter. I have satisfactorily proved that this is not so, provided the following conditions are complied with :

- 1st, We must have good butter making cows. 2d, they must be fed upon such food as shall enable them to produce a rich quality of milk. 3d, this milk must be set, and kept at the right temperature, and skimmed at the proper time. 4th, the cream must be churned when new, not forgetting also that for churning a certain temperature is required to obtain the best butter.

To follow butter making successfully through the entire summer, requires the utmost skill and judgment. Where this branch of dairying is to be followed, a proper place to set the milk should be provided. This room may be situated above ground, and having, if possible, three of its sides exposed to the air, in order that we may the better control the heat and cold, by proper means of ventilation. As a matter of course everything must be kept clean and neat about the surroundings. It should be double boarded, and well plastered within, in order that sudden changes in the weather may not be as quickly communicated to the milk. A piazza of sufficient depth, to keep the sun from striking the sides of the building, would be a desirable addition. With every precaution which I can adopt, I have been unable, in hot days, to keep the milk sweet long enough to obtain all the cream.

In order to overcome this difficulty "milk coolers" of different styles have been devised. At the New York State Fair, which I had the pleasure of attending last autumn, I noticed several of these on exhibition, accompanying each of which

were very favorable recommendations from those who had used them, in the butter dairies of that State.

From my own experience I can say nothing as to their practical value, but it is my intention to test their merits for myself, during the coming season.

The only thought of those people who make only a small amount of butter, as well as of those who make it but a part of the year, seems to be to provide the coolest possible place for their milk. This is well enough during the hottest summer weather, but during the cooler portions of the spring and fall, a moderate amount of heat is necessary, since too much cold is as injurious in preventing the rise of cream as too much heat. For this reason I am satisfied that a large amount of butter is always lost by this class of farmers, for the lack of a properly arranged room in which to set their milk, where the temperature may be kept high enough to induce all the cream to come to the surface.

We found it necessary to warm our milk room until nearly the first of July, with the exception of a few of the warmest days in May and June, and resumed warming it nights and mornings early in September. A proper amount of heat has much to do in giving to the butter the desired color.

A very dry atmosphere, as well as a current of air blowing upon milk, is very injurious to the butter-making qualities of the cream. Cream, when dried, cannot yield as much butter as when soft, for the reason that whenever dry and soft cream are churned together, the butter globules contained in the soft cream break sooner than those of the dried, and thus while, to all outward appearance the butter has all come, much is still floating in the buttermilk and is lost.

There should be sufficient ventilation to carry off all steam which may arise from the milk while warm. To accomplish this the current of air should be admitted as near the ground as possible, by means of suitable openings, and, in order to regulate this current, movable shutters should be attached. A ventilator leading from the top of the room to the open air is also needed. In arranging the room, slats rather than shelves should be used on which to set the milk. We hear the setting of milk in deep pails highly recommended by some, but from my own experience I can say nothing in regard to it.

The sweetest and best flavored butter is undoubtedly obtained from milk which is allowed to stand only twenty-four hours, but we cannot get as much as when the milk stands longer.

In order to satisfy myself as to the proper time for milk to stand before skimming, two trials, of a week each, were made during the month of December, from which I obtained the following results: During the first week the milk was allowed to stand thirty-six hours. The amount of milk for the week was 1,493 lbs. or 678 quarts,—2½ lbs. to the quart. From this milk 69 lbs. of butter were made, or an average of 1 lb. of butter for every 9½ quarts of milk. The second week the milk was allowed to stand but twenty-four hours, and the following was obtained: The milk weighed 1,296 lbs. and measured 589½ quarts, and from this amount 51 lbs. of butter were made, 11½ quarts of milk being required to make a pound of butter. Thus we cannot afford to skim the milk in twenty-four hours when the weather is favorable for butter-making, unless it is our intention to make cheese at the same time.

As a general rule, thirty-six hours seems to be, under all circumstances, the proper time for milk to remain before skimming. Whenever the weather is hot and sultry, however, we must of necessity skim sooner, but the cream should not be allowed to remain longer on the milk, even in favorable weather, as it will become bitter, and when churned imparts a like flavor to the butter. The right temperature is about 62°, but if the animal heat can, by any method, be quickly removed from the milk, a considerably higher temperature may be preferable.

In order to test the comparative merits of deep and shallow setting, we placed three pints of milk in some pans, and five pints in others. The same number of quarts were set in the shallow as in the deep setting, but the former produced but 22 lbs. of butter, while the latter gave 23½ lbs., a difference of 1½ lbs. in favor of the deep setting.

Cream should be churned in summer at a temperature of 56° to 58°, but for churning in winter it must be raised to 60° or 62°. No one should commence churning unless he knows exactly the temperature of the cream, as butter will not come without much unnecessary labor unless the cream is of the proper warmth.

Although it may be out of place to speak of a particular churn

By the Worcester West, . . .	THOMAS P. ROOT.
Worcester North, . . .	EUGENE T. MILES.
Highland, . . .	JONATHAN McELWAIN.
Deerfield Valley, . . .	ROGER H. LEAVITT.
Bristol, . . .	EVERY P. SLADE.
Plymouth, . . .	CHARLES G. DAVIS.
Nantucket, . . .	ANDREW M. MYRICK.
Appointed by the Executive, . . .	JAMES F. C. HYDE.
Signed,	NEWTON S. HUBBARD, <i>Committee.</i>

Messrs. Goodman, Clark and Birnie were appointed a committee to select and report upon a list of subjects for essays, and committees to which they should be referred.

Messrs. Stone, Fearing, Slado, Peck and Hubbard were appointed a committee to consider and report upon the time and place of holding the country meeting of the Board.

Messrs. Moore, Fay, Peck and Goodman were appointed a committee to report the assignment of delegates to attend the county exhibitions. It was

Voted, To limit the number of the committee to visit and examine the Agricultural College to three ; when

Messrs. Leverett Saltonstall, Andrew J. Bucklin and S. B. Phinney were constituted the committee for the present year.

Mr. Clark presented and read a report as delegate to the exhibition of the Martha's Vineyard Society.

Col. Wilder presented the following essay upon

FRUIT CULTURE.

The undersigned respectfully reports that nothing of an extraordinary character in regard to fruit culture has occurred during the year 1871. In accordance with the general law that excessive production is always at the expense of succeeding crops, the crop of apples and pears of the year 1871 has been small, the natural result of the overbearing of the trees in the previous year.

The attention given to small fruits, especially the strawberry, is constantly increasing, and has already become not only an important but a profitable branch of culture. This is one of

the specialties which our cultivators are adopting, and in which they compete successfully with richer soils and more favored agricultural sections of our country,—a system which we believe must ultimately prevail in Massachusetts of cultivating those crops more generally, which are best adapted to our markets.

Among the lessons of experience which the Committee have learned, they would submit the following, as opinions which are now received and generally acknowledged as correct.

THE INFLUENCE OF WARM, DRY SEASONS.

The observations of the last few years, under the influence of warm, dry seasons, would appear to have established the principle that such weather (without excessive drought), especially in the earlier part of the summer, is more favorable to the perfection and ripening of fruits, particularly grapes, than cold, wet seasons. The fact is prominently shown in California, as we have witnessed by personal observation ; and is especially to be seen in the cultivation of the grape there, and also in Europe, and in our Northern States, where, under the influence of such seasons, neither the vine nor its fruit is affected by disease of any kind. These conditions we have noticed are also peculiarly advantageous for the formation of fruit-buds, and the storing up of the necessary perfected food for a future crop, and for the ripening of the wood, so necessary that it may endure the winter with safety.

DRAINING OF FRUIT LANDS.

In conformity with the foregoing remarks, we see the importance of thorough *draining* of our fruit lands, which produces in soils not naturally possessing them the conditions of warmth and dryness which we have named, thus rendering the condition of the earth, in respect to warmth and dryness, analogous to that of the air, of the importance of which we have before spoken. Besides these advantages is the thorough aeration of the soil, whereby it is enabled to absorb fertilizing matter from the atmosphere, rain, and snow, and the moisture evaporated from the springs below.

PREPARATION AND CULTIVATION OF THE SOIL.

It seems scarcely necessary in this presence to say that thorough preparation and enrichment of such soils as are not already rich is essential. Ordinary farm culture will not produce the highest class of fruits; they must have garden culture, and with this they never fail. After this thorough preparation, the cleaner the culture the better, and this should be shallow, so as not to injure the roots, but to preserve them near the surface.

MANURES, AND THEIR APPLICATION.

The subject of manures is a most important one, and every year becoming more so. The supply of manure in this State is unequal to the demand, and every year increases the disparity. What would be our feelings if the supply of wheat, on which we depend for our daily bread, were inadequate to the demand? Yet men are not more dependent for life upon their daily bread than are our fruit crops upon the food which is supplied to them in the form of manure of one kind or another. To supply this want we shall be compelled to rely in great measure upon artificial fertilizers, and chemistry has not yet taught us, as it will doubtless in the future, how to supply the wants of our fruit crops with certainty and abundance. But we cannot too often or too forcibly impress upon the minds of all cultivators the sacred duty of saving every particle of fertilizing material, and applying it in such manner as will produce the utmost effect. And on this last point the lesson which experience has taught us is, that manure applied to fruit-trees should be either in the form of a top-dressing, or as near the surface as is consistent with the composition of the soil and the preservation of its fertilizing elements.

MULCHING.

While on this subject we will add as another of the lessons of experience, which may be said to be fixed, the advantage of mulching for dry seasons and soils, whereby the temperature and moisture of the soils is kept uniform, and the fertilizing elements in a soluble state, an essential condition for the production of perfect fruit.

THINNING OF FRUIT.

This is another lesson which we have learned, and the necessity of which we have often endeavored to impress upon cultivators, and which every successive season teaches with stronger emphasis. It is absolutely necessary for all who send fruit to market to send large fruit, and the markets are constantly and progressively requiring large and fine fruit. Even the Seckel pear, which once commanded in Boston market the highest price, will not now, unless of extra size, sell for any more than, if as much as, common varieties of larger size. A medium-sized fruit, or even one of smaller size, may be more economical for use, but until some decided change in the preferences of the majority of purchasers shall take place, large fruit will sell better than small. To produce this, the fruit must not only have good cultivation, but must be thinned. We may lay it down as a certain rule, as has been stated, that excessive production is always at the expense of both quantity and quality, if not in the same season then in succeeding ones; for when branch is contending with branch, leaf with leaf, and fruit with fruit, for its supply of light and food, it would be indeed an anomaly in nature if this should not result in permanent injury to the trees as well as to the annual crop.

SHELTER.

The necessity of shelter was not as soon perceived as some of the other lessons which we have named; yet, with perhaps the exception of a few favored spots, its importance is year by year becoming more generally appreciated. The removal of forests diminishes the quantity of rain, increases the evaporation of moisture, reduces the temperature, and subjects our fruits to greater vicissitudes, so that the peach and many of our finest pears do not succeed as well as formerly, except in gardens or sheltered places. The importance of shelter was well understood as long ago as the time of Quintinye, the celebrated gardener of Louis XIV., who, in his work on gardening, gives full directions for planting trees for shelter. This was in a country long settled and denuded of its forests; and though our ancestors, planting fruit trees in a virgin soil, thickly covered with wood, failed to perceive its necessity, we, in our older

States, who have come to much the same conditions as existed in the time of Quintinye, experience the same want.

INSECTS AND DISEASES.

The subject of insects and diseases is daily attracting more attention, for their depredations are daily becoming a greater evil, and the importance of entomological investigations is every day more plainly seen. It is only thirty years since Dr. Harris first published his work on "Insects Injurious to Vegetation," and great is the debt of gratitude which we owe to him and to the succeeding investigators who have given their lives to studying the habits of these little "creeping things which be upon the earth," that they may teach us how to destroy those which prey upon our trees, and to distinguish our friends from our foes. Every plant imported from abroad brings with it a new insect or disease, and the dissemination of new plants and varieties, without which there can be little progress, inevitably disseminates their insect enemies. On this subject the words of Edmund Burke are appropriate: "The most vigilant superintendence, the most prompt activity, which has no such day as to-morrow in its calendar, are necessary to the farmer;" and we may add, still more to the fruit-grower, and tenfold more necessary in combating our insect enemies. The neglect of battling with these vile creatures is the great bane to successful cultivation. As long as moral evil exists in the world, so long may we expect there will be evil in the natural world, and he who is not willing to contend against both is not worthy of the name either of cultivator or of Christian.

These insect plagues can be exterminated, or be subdued, so that no material harm shall be caused by them. We have discovered means for preventing the ravages of the currant-worm, curculio, canker-worm, caterpillar, melon-bug and aphis, and the mildew and other diseases of our vines. If we can do this, is it not reasonable to suppose that we can discover remedies for, or the means of preventing, all the diseases and depredations that vegetation is liable to?

But some one replies, Let nature do all this, let nature perform her perfect work. True, but nature brings us weeds, thistles and thorns, insects injurious to vegetation as well as those that are useful; and we were placed in this world, not merely

to assist nature, but to meet with and overcome the obstacles which she sometimes places in our path.

For the Committee,

MARSHALL P. WILDER.

The report was accepted and laid over under the rule.

Voted, To appoint a committee of three to consider and report upon the time of holding the exhibitions of the Plymouth, Bristol, Bristol Central, Marshfield, Hingham and Norfolk Societies.

Messrs. Stockbridge, Hubbard and Peck.

Voted, To appoint a committee on printing.

Messrs. Fearing, Knowlton and the Secretary.

Dr. Loring submitted reports as delegate to the Worcester West, Barnstable and Middlesex South Societies.

Mr. Fay, on behalf of the Examining Committee, submitted the following report on the

MASSACHUSETTS AGRICULTURAL COLLEGE.

The undersigned, appointed by this Board a Committee for the Visitation and Examination of the Agricultural College, for the year 1871, beg leave to submit the following

R E P O R T .

The several members of the Committee, with the exception of Professor Agassiz, have attended the examinations of the College at the end of each term during the year. On account of ill-health in the early part of the year, and an absence from the country the last part, your Committee were deprived of Professor Agassiz's presence and counsel at the several examinations, except at the annual examinations in July last. It may not be improper to state that his unexpected presence on that occasion, was not only a source of the highest gratification to your Committee, but unmistakably a powerful stimulus to the exercises of the College.

Some of your Committee commenced their official connection with the State Board of Agriculture at the beginning of the

past year, and it was with some misgivings that they undertook the discharge of the duty assigned them by your Board,—a duty which had for its object the careful and close examination and thorough investigation of the management and success of an institution which was nurtured by the State, and which was beginning to be, if it had not already become, second to none in the position it occupied, and in the encouragement and good will which it was receiving from the citizens of this beloved Commonwealth. And more especially was the responsibility which had thus been imposed upon us, the more forcibly impressed, when we remembered at the outset, that the year over which our duties extended was to be the most important one, so far as the interests of the College were concerned, that had occurred since its foundation. The term of four years was about to expire. The first graduating class of an institution which by very many had been regarded as a doubtful experiment was to be sent forth as an “advertisement,” both at home and abroad. What had before been but an experiment, was this year to become a reality—or a failure. The old adage “by their fruits ye shall know them,” was this year to be made impressively truthful as regards the past success and the future welfare of this institution, through the agency of those young men of the graduating class, who were to go forward into their several fields of labor either richly laden with the results of an agricultural and scientific education, received at an institution supported by the generous benefaction of this Commonwealth, and thus proving the wisdom of its founders, or else *found wanting* when “weighed in the balance,” and thereby stamping a stigma upon the College, and causing discouragement to its friends, who had hoped so much and labored so well to promote its best interests. With these reflections impressed upon us, our first visit to the Agricultural College (which was at the close of the spring term), was anticipated with no small degree of interest to the Committee, and this interest was not in the least abated at any subsequent visit during the year.

Your Committee have endeavored to take particular notice of all that in any way helped to make the College what it is or what it *should be*, that they might be able to present to your Board as intelligent a report as the circumstances of the case would permit, that you might the better judge what compensa-

tion the citizens of this Commonwealth were receiving, and what were the guarantees for the future from that institution, which was now so cheerfully receiving your fostering care.

The examinations of the several classes in the recitation rooms were attended by the Committee at the close of each term, and while they do not deem it necessary to refer to each class particularly, there was one feature so manifestly prominent in nearly all, that we regard it as a fact worthy of particular notice, to wit: "each student was taught to think for himself"; the student in some branches being compelled to pursue the investigation of the subject without the aid of any text-books; and, in the judgment of your Committee, if the success of any one department was greater than another, it was largely indebted to this cause, as infusing more life and zeal in the professor, and a wider scope of thought, greater independence and proficiency in the pupil; and while we would not recommend the absolute abandonment of all text-books, we would suggest that, if less reliance were placed upon "text-books," and the students compelled to search the great "book of nature" for ideas and scientific truths, we should have stronger and better men,—men of more enlarged views of life, and practically better fitted for the great work entrusted to them; having derived their thought and founded their judgment not upon the opinions of other men, but upon the great scientific truths which they had garnered from science itself.

The course of study pursued in the several branches is so minutely defined in the report of the trustees, that we do not regard it necessary to enlarge upon it. We have noticed with great pleasure, the efforts of the several classes in rhetoric at the close of each term, and feel justified in saying that in our judgment they would compare favorably with those of any institution bearing the name of college within the Commonwealth. We have been the more gratified in this, because we believe that while the main object of this institution is and *should be* to provide a thorough course of instruction in the science of agriculture and those sciences more immediately connected with it, yet the value and importance of self-possession and self-reliance, obtained only by a constant use and careful culture of the oratorical powers, cannot be overrated; for, after all, it is to be the

most effectual medium through which the value of the collegiate education is to be made known to the world.

The power of communicating and transmitting ideas with the human voice in an interesting and impressive manner, is one of the greatest gifts bestowed upon man, and its culture in an institution like this should not only be encouraged, but carefully guarded and earnestly recommended.

The graduating class, consisting of twenty-seven members, acquitted themselves with great credit in their several examinations and graduating exercises. Their uniformly gentlemanly bearing and manly appearance were noticeable in a marked degree. No one could look upon that company of young men without realizing the wisdom and foresight of those minds that originated the idea of requiring "military tactics" to be taught in agricultural colleges. The influence of their military training was so manifest, not only upon their general physical health and development, but also in those indispensable attributes which help make a true gentleman, that we do not believe too much importance can be laid upon this branch of their education, both as exerting a healthful influence upon the students themselves, and as a safeguard for the protection of our country in the future.

We regard the professors in the several departments to be eminently qualified for the work assigned them,—earnest, zealous workers for the interests of the College; and no one more so than the honored President, whose very being is inseparably connected with the best interests of the College and farm. Fortunate indeed that its management has fallen into so able hands.

We are happy to say that the recommendation of your previous committee relative to the establishment of a professorship of veterinary science has been heeded, and such professorship has been established, an appointment made, and the science will hereafter be thoroughly taught.

The farm itself has been examined with considerable care, with a view of determining what was the mode of farming adopted, and the practical result to the College and community of any experiments that may have been tried for the purpose of ascertaining what crops to raise and how to raise them, so that they should return the greatest profit to the producer.

The farming has been under the immediate supervision of

John C. Dillon, the Farm Superintendent, a gentleman admirably adapted to his work. The destruction of a part of the farm buildings by wind, the year previous, caused the necessity of erecting a large number of sheds for the protection of the cattle, sheep and swine, and the superintendence of the erection of these sheds unavoidably demanded the personal attention, labor and constant oversight of the Farm Superintendent for a large part of the season, so that his attention was diverted from the farm much more than it otherwise would have been. The principal attention paid to the farm the past year has been in raising and harvesting the ordinary crops, with, perhaps, a single exception. The raising of the "sugar beet" has received considerable attention, for the purpose of testing the expediency of making it an agricultural enterprise in this Commonwealth. The results of the experiment will be in detail before you, in the report of the trustees, who have, through eminent professors and chemists, tested it thoroughly. Your Committee are satisfied from personal observation that the "sugar beet" is a profitable crop to raise for feeding purposes, and that sugar of the finest quality can be made from it. Whether the manufacture of sugar can be made profitable in Massachusetts we have no means of judging advisedly and express no opinion.

We are informed that the products of the farm the past year, are as follows, to wit:—

	Acres.	Roods.	Poles.
226 bushels of potatoes, gathered from . . .	3	—	15
160 bushels of oats, gathered from . . .	4	1	9
840 bushels of rutabagas, gathered from . . .	2	—	—
300 bushels of white turnips, gathered from . . .	—	—	—
59 tons of sugar beets, gathered from . . .	4	2	33
1,300 baskets of corn in the ear, gathered from . . .	10	2	20
15 tons of Hungarian grass, gathered from . . .	12	—	—
125 tons of hay, gathered from	133	2	—

The horticultural department has become one of the most attractive features of the College. The very liberal donation it has received from Dr. Durfee, places it in a very substantial

condition. The influence upon the students can but be of a healthy character. It cannot well be dispensed with, and should receive the attention its importance demands.

The farm buildings, including the barn and sheds, are now in very fine condition. The erection of the sheds already referred to supplies a much-needed demand. They are constructed with a view of providing for the comfort of the animals, and great convenience in their care; and although not entirely completed at the last visit of the Committee, yet they had so far progressed towards completion as to indicate their value.

The labor about the barn in the care of the stock, we were informed, was principally performed by the students, and evinced care and economy in its management.

The live stock generally was in good condition, consisting of nineteen swine and seven horses, and about sixty head of cattle, largely of thoroughbreds, and representing seven different breeds:

We, however, would suggest that this branch of the agricultural part of the College is one which requires in its management great skill and sound judgment, and in our opinion the selection and breeding of stock for the farm should be entrusted to the care of *one man* who is thoroughly acquainted with his business, and who from his experimental knowledge is able to determine what particular breeds and crosses are the most profitable; and especially so that when he is convinced that a particular breed or animal is unprofitable for the farm, he may have full power and authority to discard it and introduce others in its place.

The experiences of stock raisers in different sections of the country have been so varied, owing to the difference in climate, quality of food and various other causes, that no general and fixed rule has been or can be adopted which seems wise or safe to follow. Hence the necessity of placing the care of so important a branch, and one upon which so largely rests the reputation of this institution, in the hands of one who himself personally is able to trace the history and results of his experiments in this regard from day to day.

We are gratified that so much care has been already taken, and that recently a new interest has been awakened in this re-

gard, and we are confident, if continued in the hands of the present manager, unprofitable stock for the farm will not long be tolerated.

The farm already begins to show the beneficial results of underdraining, a large tract of mowing land having been by this means reclaimed, so that from comparative worthlessness it has become a source of great income.

The old and worthless apple-trees on the farm have been removed, and an orchard of the different kinds of fruit, sufficient at least to supply the demand upon the farm, has already been planted.

The raising of the grape in Massachusetts is no longer an experiment but has proved to be a very profitable investment, and the universal acknowledgment of this fact warrants the Trustees of the College in making large provision for its culture, a well-located vineyard of two acres having been planted. There can be no reasonable doubt of its success.

The more immediate wants of the College at the present time, seem to be more enlarged accommodations for pupils, and also some means to reclaim the pasture land which, to a great extent, is at present in an unprofitable condition.

We can hardly expect that an institution still in infancy would have arrived in this short time to that degree of perfection, that it presents no material for the critic.

Your former Committee suggested that the College should possess a "working farm," in which we fully concur; and it cannot be expected that all the rough places will at once be smoothed, or the unfertile spots reclaimed. It must necessarily be the work of many years. What we have a right to expect, and all that we can reasonably ask, is that the best use should be made of the liberal provisions in its behalf that can possibly be made, so that the success achieved by the triumphant victory of the students of the College in their late trial of "muscle," shall be simply emblematical of that greater triumph which in the future awaits the representatives of the Agricultural College, when they shall enter the race for a trial of "brain and muscle."

We congratulate the State Board of Agriculture upon the eminent success which has thus far crowned the efforts in behalf of the Agricultural College. Let its friends continue to be

mindful of, and watchful over its welfare. Let no unjust criticisms be allowed to pass with impunity. Let the hands and hearts of the faithful professors and trustees be supported and encouraged, and the time is not far distant when there will be one universal song in favor of the Massachusetts Agricultural College.

F. F. FAY.

N. S. HUBBARD.

JOHN JOHNSON.

WM. KNOWLTON.

The Report was accepted, when it was voted to take from the table the Essay on the

MANAGEMENT OF THE DAIRY.

A motion to adopt the report led to the following discussion:—

Mr. GOODMAN. The report was long and interesting. I understand it is to be published, and until we see it in print we shall not be able to ascertain fully its merits, and the objections to it. I believe we all know the system called the Barre system, and the character of the dairy work up there, but there are one or two matters in the report which I should like to inquire about, as they are of considerable importance to us as farmers: one is the length of the flooring for cattle. If I understand Mr. Ellsworth aright he thought the planking for cattle should be as long as the cattle. What length did you give?

Mr. ELLSWORTH. I gave a length of four feet nine inches, or any length so that the whole heft of the animal when down will rest upon it.

Mr. GOODMAN. So that the manurial matter will drop off behind. Another point was, Mr. Ellsworth thought there should be a little slope. Is there any necessity for having a slope for cows? It may be necessary for steers and bulls, but do not cows lie a little better if the planking is level?

Mr. ELLSWORTH. I shouldn't want it to slope towards the head at all, I should prefer to have it slope a little to the rear, I did not give the amount of pitch, except very little.

Mr. GOODMAN. I understand you it was better to lay the planks with the grain than across. If laid with the grain I find

they become slippery, and when laid across the grain I find that does not take place.

Mr. ELLSWORTH. I should prefer to have short plank, and sift a little sand on the floor if necessary to prevent slipping. It is much easier to renew the planks.

Mr. GOODMAN. If there is sufficient bedding of course that is not necessary. I think my experience will be found to be the experience of a good many farmers, that where planks are laid across slipping does not occur, grooves do not wear in them so easily.

One other point which Mr. Ellsworth touched upon I did examine into; and that is, putting milk into deeper pans. After our fall meeting I visited Col. Waring's dairy. I find he keeps a very fine breed of Jerseys, and a large number of cattle, making butter principally for the Newport market in the summer, and more or less for the Boston market in the winter. His pans are made on an improved German principle, and they are about six inches in diameter, if I remember rightly, by eighteen inches deep, and they were immersed in running water. Instead of taking for his large number of cows about twenty or thirty pans, I think the milk was all put in about half a dozen. While I was there he skimmed the cream from one by means of an ordinary dipper, and the cream that came up at that time by measurement, I think, was nearly two inches deep. So far as I could learn from him, he did not find that there was any increase of cream by this process, but he thought the butter made from it a little more uniform in character, and he thought the expense of having a few cans instead of having so many was less, and upon the whole it was less trouble. He had a cellar made for the purpose, where the temperature was kept the same both winter and summer, with water always running through from a spring, and the pans were kept in that all the time. He did not get more cream, but he thought he got it more easily, and with less trouble. I understood him to say he got as much. Of course this is a matter for experiment, and those of us who have running streams of water can very easily try it.

QUESTION. Did he try a certain number of quarts of milk each way, and see which took the most quarts to make a pound of butter?

Mr. GOODMAN. No, sir; but he is a writer on this subject as

well as a practical agriculturist and man of science. Everything that is done on his farm is generally done by weight and measure. He keeps an accurate account of what is sold, and all that. I understood him that the amount of butter obtained from the same number of cows did not differ materially under the two systems, but he thinks the quality was a little better under the latter.

QUESTION. Did he keep the temperature the same the year round ?

Mr. GOODMAN. Yes, sir.

QUESTION. I should think he would have to keep the temperature warmer in winter because the water is colder than in summer.

Mr. GOODMAN. Spring water is about the same temperature all the time.

QUESTION. What was the depth of the pans ?

Mr. GOODMAN. About sixteen or eighteen inches I think.

QUESTION. I think spring water brought in aqueducts varies very much in temperature.

Mr. GOODMAN. I don't think there was any fire introduced; it was down in a cellar where it is supposed to keep nearly the same temperature; I am not so certain about that. I merely mention this for the consideration of the gentlemen engaged in butter making.

ALBERT FEARING. I understood the gentleman to say in his report that he usually dried off his cows about five weeks previous to calving. I should like to ask if eight weeks is not better ?

Mr. ELLSWORTH. It is nine weeks in the report; I think you misunderstood me.

Mr. FEARING. I should like to ask, if roots are fed immediately after milking whether the milk will not invariably taste of the roots? Suppose you give them cabbages, or some of the strongest of the roots, in no case will the milk taste of them?

Mr. ELLSWORTH. I think I said where they were fed immediately after milking they invariably did not impart any unpleasant flavor to the milk or butter. That is my experience. I have fed cabbages and flat turnips just after they were pulled from the ground to my cows, and the butter has come to this market. Probably most of you know Mr. Hovey, and if it had not been

good he would have detected it. I have no doubt if they were fed half an hour before milking the milk and butter would taste of them.

Mr. FEARING. In regard to the amount of milk required for a pound of butter,—twelve quarts I think the report stated ; down in our part of the country we find that nine quarts on the average will make a pound of butter ; that is, milk from Jersey cows.

Mr. ELLSWORTH. As I stated yesterday, it is very important, if you have anything to report, to report it as it is. I reported it as I found it. I gave the stock it came from and the butter that was produced, under all circumstances, and at all times of the year. Now you will notice that this was given in July and in August, but the reports that we get in the newspapers as to how much milk it takes to make a pound of butter are not all satisfactory to me ; they are given mostly in the butter-making months, not in August, or in each month through the year. I have no doubt myself but that the Jersey cow is preferable to make butter from ; but as to the quality of the butter made from the Jerseys being better than that made from other breeds I have my doubts. I should like to hear from Mr. Flint on that point. His is as good authority as we have in this country on dairy cows and milk and butter, and what it should take through the season to make a pound of butter.

Mr. FEARING. I milked last season ten cows, mostly pure blood, some grades, and we found that on the average nine quarts of milk would make a pound of butter. I should like to ask if different kinds of feed would not make a difference. For instance, we have in our town what we call low ground, not exactly meadow, and we find that the milk of the cows feeding there is quite inferior to the milk of the cows that feed upon our high land. It has made a very decided impression, so much so that two or three farms there have the reputation of having poor milk. Even if the cows are Jerseys they find it changes the milk. I would ask if these gentlemen have had any experience in that way. This grass is English grass, not what we call meadow grass, but it grows on low land where the fog lies in the morning.

Mr. ELLSWORTH. That is my experience, and it has been considerable on that point. I have found invariably when my

cows run where there is a large abundance of fresh feed that the flow increased, but the quality was not near as good for making butter. The milk was richer, and I could make more butter, from milk obtained from a small amount of good feed, than I could from a large amount of feed of poorer quality. It is so in winter as well as summer: when we give a poorer quality of feed, and work in straw and meadow hay, the milk and butter are poorer in proportion.

Mr. ALLIS. Mr. Ellsworth stated in his report that for a few days after a cow had calved he prevented the calf from bunting the udder from fear of injury to the cow, and then after that he allowed it to bunt as much as it chose. It has appeared to me in my experience that if a calf bunts the udder it injures the cow even when you are fattening the calf. In speaking of milk, there have been experiments in our dairy, and we have made sixty ounces of butter from twenty quarts of milk from an Ayrshire cow. The experiment has been tried repeatedly, and all the feed the cow had was what hay she wanted and two quarts of meal.

Mr. ELLSWORTH. I think I stated that if the calves were allowed to bunt the udder while there was any inflammation, it would be very apt to injure the cow; but if the bag was perfectly free from any inflammation, I have never found any trouble whatever.

Mr. ALLIS. I should like to ask Mr. Ellsworth if he has any difficulty in getting a cow with calf from one season to another.

Mr. ELLSWORTH. I have had a good deal of difficulty in that way.

Mr. ALLIS. Can you tell us of any kind of feed that will operate beneficially in that respect?

Mr. ELLSWORTH. I do not know as I should be justified in saying that any kind of feed will operate towards getting a cow with calf. My observation is, if a bull serves a cow in the earliest part of the heat, it will be more likely to be effectual. I have observed this more frequently where a bull runs with a herd of cows. Nature teaches them the right time. My observation has been that the cow receives the bull in the earliest part of the heat, and it is very seldom that she receives him more than once or twice.

Mr. ALLIS. There has been great complaint in our locality,

for two or three years, in regard to this matter, and at a meeting of the Harvest Club of the Connecticut Valley, in our town, some six weeks ago, one of the best dairy farmers in Conway said he had been troubled very much in this way for several years, until within the last year he was told by some one to feed his cows with bone-meal regularly. He has tried it for the last year, and he says that he has not had a single cow out of ten fail. I have adopted that plan within the last few months with my own cows. I give them about a great spoonful of bone-meal once a day, and I have had no trouble this winter at all in that matter.

Mr. HUBBARD. There is another very important matter in connection with what Mr. Allis has said. I should like to know whether there is any difficulty in different parts of the State in regard to cows losing their calves before the proper time. I know that last year I heard of twenty cows. I lost seven, and it was something that never had occurred before in my experience. This year, up to the time I came away, I lost four without any apparent cause whatever. If there are other members of the Board in different parts of the State suffering in this way, I should like to know it.

Mr. BUCKLIN. I should like to ask Mr. Ellsworth if he practises bleeding a cow or drenching a cow with cold water after she has taken a bull? I had a Durham heifer that would not breed, and finally I was advised to bleed her until she could hardly stand. I did so, and since that she has bred without any trouble. In regard to Mr. Hubbard's remarks, I will say that I lost a calf from a very choice heifer a few weeks ago.

Mr. ELLSWORTH. No; I never tried anything of the kind.

Mr. J. F. C. HYDE. Perhaps I may be pardoned for saying a word or two—though I am not a cattle man, and do not profess to teach any one here or any where else—in regard to this matter of butter, butter making and butter selling. I am interested in both, as I do not make all I need, though I intend to hereafter. I like the Jersey butter, and I was rather surprised at some remarks that the Secretary made in Vermont, as I saw them published. I am very particular about butter, and have bought it at high prices, paying from eighty cents to a dollar a pound for table butter, week after week, having Jersey butter

always. The point I wish to make, and I hardly need speak of it here, for no doubt all the gentlemen present have realized it as much as I do, is the importance of making good butter. Now, there is always plenty of poor butter,—hundreds of tons of poor butter in the market. If gentlemen go through Boston market, as I do year after year, in pursuit of good butter, not only for myself, but for my neighbors,—for they have an opinion that I am a pretty good judge of butter, having cultivated this matter of tasting to some extent in horticultural matters,—they would see that the quantity of good butter is very small; it is amazing how small it is in comparison with the amount of poor butter. I know a dealer who brings into this market hundreds of tons, and perhaps thousands of tons, and the way I manage to get good butter is this. In the autumn I say to these dealers from whom I have had my butter for ten or twelve years, select out of the best butter you bring here, four, five or six tubs, and send me up word. They will be a month perhaps before they get four or five tubs which they want me to look at. Then I go down, and perhaps I won't find a tub of really good butter, or at least butter that I should wish to put on my table. They say they are the best they have, and they have selected them out of tons. They will say: "Look at the quantity of butter we have there, yet there is not a tub of it you would take as a gift to put on your table." Then I say: "Set out the best that comes in the next few weeks;" and this year I was over two months getting my butter.

You may say I was very particular. I am particular enough to get good butter, and I did succeed in getting two or three tubs of very good quality. Now, it does seem to me that if the people of Massachusetts, and all over the country, realized how they suffered by this state of things (both sellers and consumers), we would speedily get better butter. Look at the difference: here I pay—and I presume others of you do the same during the summer months—eighty cents a pound for my butter, and I have paid as high as a dollar a pound. Mr. Sargent's butter sells for a dollar and a quarter a pound, and the butter made by other gentlemen sells from eighty cents to a dollar a pound, while medium butter brings only from twenty to thirty-five cents a pound. What makes this difference? It is largely due to the management in making up of that butter.

Now, is it not possible for people to make universally a better article than is now made?

Mr. Ellsworth tells us that certain conditions, properly observed, will give good butter, with now and then an exception. If certain rules may be laid down for making good butter, pray tell me why our people are making a poor article of butter almost universally, when a good article might be made? I do not find fault with the butter makers any more than I do other people, but the butter makers are blind more than other classes of farmers to their own interests, more than any other set of men. If they would make a better article of butter, it would find a more ready sale, and a much larger price would be paid for it than is paid at the present time.

Another thing is the shape in which it is sent to market. A great deal depends upon the way in which fruit, or butter, or any thing of that sort, is sent to market. If it is sent in good condition, done up in good shape, the farmer realizes more for it; three or five, or, perhaps, ten cents more a pound on butter, than he would if it was prepared in an indifferent manner for market.

The way our Barre friends send it, I believe, is in a box containing eight to twelve pounds, and I have once in a while bought it in that way. But if it is sent in lumps, it should be put up in an attractive way. People will pay a little more for a handsome lump of butter to put upon the table, than they will if it comes in a box, unless it is made into lumps at home, which is sometimes done.

The principal point I make, and which I wish to impress upon every body who makes butter, is to make better butter. If it is true that they have not good stock to make butter from, then they had better turn their attention to improving their stock. I sometimes think I should like to take the butter makers of New England and New York, and other places, who send their butter to the Boston market, and make them taste the butter they would find in the stores here; they would go back home determined to make better butter in future.

The best butter, it is said, comes from Vermont. I do not find it so. I find the best winter butter comes from New York State, and some of the best butter in summer comes from about Boston. To eat some of the butter that is made is worse than taking medicine; because when you take a dose of nauseating

medicine you make up your mind to it. Those poor fellows who have to dine at the hotels and restaurants in Boston, know what it is. I never touch the butter in them; I cannot. I had rather go without. Their excuse is, that it is as good as the average butter in Boston; that to get better they have to pay ten or fifteen cents a pound extra. Is there not some way to raise the standard of butter, so that we may have better butter in the market?

Mr. STURTEVANT. The gentleman from Hingham asked a question in reference to the effect of the feed upon butter, and the answer to him was, that if certain food was given half an hour before milking, it affected the milk, and consequently the butter; but if fed half an hour after milking, it does not affect it. That certainly is a matter of importance to everybody, because if we feed as he says, and that affects the butter so seriously, that is a matter which every gentleman at this Board wants to understand. It is the food that we give our cows at a certain time, as I understand it, which affects the milk, and induces bitterness in the butter, even if the utmost care is taken in making the butter.

Mr. HUBBARD. I have no doubt of the truth of the remark just made, that the food given to cows will affect the milk. But that was not the subject on which I wished to speak. I desire to refer to one point suggested by the essay of Mr. Ellsworth, and that is, as to the time which milk should stand before the cream is taken off. He said that milk standing twenty-four and thirty-six hours would give different results in the quantity of butter, but he said nothing about the quality. Now, I have been told that cream that was taken off of milk after it had stood twenty-four hours, if it was taken off separately could not be churned into butter. The question has arisen in my mind whether the little more cream that we got by allowing the milk to stand more than twenty-four hours, was not at the expense of the quality of the butter. It has been said that butter has been sold from 45 cents to \$1.25 a pound. If the butter made from cream that is taken off in twenty-four hours is of a superior quality, is it not better to take it off then than to let it stand twelve hours longer, although we may get a little more cream, if the butter is to be of an inferior quality?

Mr. ELLSWORTH. If you disturb milk after it has stood twelve

hours, the butter made from the cream that you get after that is never of so good quality as it would have been if the milk had remained undisturbed for twenty-four hours. You get the finest and best quality of butter in twenty-four hours, but I am satisfied you get more butter if you let it stand longer, and I have never been able to find anybody who could detect difference enough to make any difference in the price. I have no doubt that cream taken from milk after standing twenty-four hours, and churned immediately, before it has changed at all, will make the sweetest butter. When it has remained thirty-six hours, the cream is new, but it is not sweet. That is the time, I think, to make the best butter, when it is new.

Mr. HUBBARD. I had some experience in the Worcester Co. cheese factory, which was the first factory started in Massachusetts. We operated somewhat in the making of butter and cheese at the same time. We heated our milk with steam, and we applied the steam-engine so as to churn the milk and make butter from that. We made a very excellent quality of butter, but we found that we got a small quantity, and then the milk went right into cheese, which, to all appearance, was just as good as before; showing that the butter, when everything is perfectly sweet, is of excellent quality. We found this difficulty: that when so much liquid was churned, the amount of butter was so small that it troubled us to gather it well, and we abandoned the experiment.

Mr. HADWEN, of Worcester. In the essay of Mr. Ellsworth, he gave us the length of the stalls. It seems to me the better way is to make your stalls a little short, and then lengthen them according to the length of your cows, which you can easily do by putting down joist. You find that some cows need stalls from four to eight inches longer than others. And furthermore, if you have your flooring level, and then put down 2 by 4 joist on the back part of the floor, and fill the floor with bedding, that prevents the bedding from slipping back, and makes a very comfortable, dry floor for the cattle to stand on.

Now, in relation to bitter butter. There are various causes for that. If you feed your fodder with wormwood in it to cows in autumn, you will have bitter butter; and of course you will have bitter butter if you let your cream remain too long. Mr. Hyde has alluded to the poor butter which is made. There are

some farms which cannot produce good butter. I knew an instance in our county where a shrewd farmer, finding he could not make good butter at home, bought the farm of a man who was noted for good butter, and there he was successful;—but the man who had always made good butter, moved his stock and his wife to another farm, and he could not produce good butter—butter that would be satisfactory to Mr. Hyde or any one else. So there is a great difference in farms as to their capability to produce good butter.

Mr. Ellsworth gave a pretty large quantity of milk to a pound of butter, but I believe the Barre cows have not been bred for butter-making purposes, but for beef-producing and cheese-producing cows.

Mr. CONVERSE. I would like to ask if there is any gentleman present who has ever practised churning milk. I have known persons in Vermont who churned their milk immediately after milking, and they said they produced sweeter and better butter, and got more of it, than by churning cream.

Maj. PHINNEY. That applies to persons who make their butter from a pint of milk.

The CHAIRMAN. A neighbor of mine churned his milk for a long time by an English machine, introduced for the purpose. He had some butter churned before a party of people who were invited to see it, and the butter was delicious. But he had to give it up for some reason—I do not know what.

QUESTION. Were the cows Jerseys?

The CHAIRMAN. No, sir; grade cows.

Mr. HYDE. It was my fortune or misfortune to sell a herd of pure-bred Jerseys for Mr. Converse, at Southborough. Mr. Converse had bred for a definite purpose, and I think had succeeded well. The reason I speak of it is, that a great objection has been made to the Jersey cattle, because of their small size and their poor quality for beef. Now, Mr. Converse had bred with two or three things in view. First, for the best butter-making qualities, in which I think he had succeeded. And my reasons for saying that are these: first, I have eaten his butter, and I know it was good butter; second, I never saw better skins on animals in my life. Then he had bred with a view to size and roundness, and plumpness of form, which are not usually found in the Jersey. He had some bulls there, one of which, in par-

ticular, was as fine a bull as I ever saw in my life. He had secured cows of good size, pure-bred Jerseys, not grades,—I will not say large, but I say of good size,—which were not rough and bony in appearance, but well filled up, of good forms, and which gave excellent milk. He had started with that object in view; but unfortunately, before the experiment had been brought, as it seemed to me, to its highest degree of success, reverses in business compelled him to sell his stock. But I believe that he had started in the right direction, and certainly had made a great gain. But if it turns out to be true, as has been said in various directions,—and I seem to feel it in the air,—that the Jersey butter is not good butter, then of course this all goes for nothing.

Now, I have been foolish enough to believe that Jersey butter was most excellent butter, and have continued of that mind up to within a few weeks. But if it be true, that we are to abandon Jersey stock for butter-making,—and that has been their chief merit,—where are we to look for butter? I have said that New York butter is the best butter that comes into this market for winter use. It is not because they have the best breed of stock there, for I understand that they are largely Shorthorns and grade Shorthorns that are used for butter-making; it is because they have some of the very best grazing facilities there. They have some of the very best farms, and a large amount of white clover is used there, and it strikes me there is no better food to make sweet butter than white clover. Whether that be so or not, I find no butter in the market that has the color that the Jersey butter has; I find no butter in the market that has the flavor of the Jersey butter. It is fine, it is delicate—possessing a fine and delicate flavor. It seems to be *refined*, so to speak. It is not crude, like some of the butters, but it is fine, delicious butter. It is said that it lacks flavor, and I am obliged to acknowledge that it is not always as high-flavored as butter ought to be that looks so well as Jersey butter does. I have found New York butter that did not look so well that really possessed a finer and better flavor. What I want in butter is this: I want color—all the natural color you can get into it. It cannot be too highly colored for me, provided it is all natural. I want it, then, perfectly fine, smooth, not greasy. People laugh at me for talking about *greasy* butter. I want it so

that it will cut just right and not be greasy. I want it so that it shall not only be perfectly sweet, but so that is impossible to detect any foreign flavor in it. And I want it to possess a peculiar sweetness, that I can hardly describe. You can better understand it after you have gone into a flower garden and inhaled the fragrance of that: There is something that is indescribable, but you want to have that in butter. For summer butter, you want but little salt; for winter butter you want more. A great deal of butter is ruined by salt. Farmers think they make a little money on the salt they put in, for which they fancy they get a high price. The fallacy of that is shown in the fact, that when that butter is sent to market, they have to take off from three to five cents a pound, in consequence of this salt. That should be guarded against.

Now, what we want is, cattle that will make that kind of butter, if we have not got them. If they are not to be found in the Jerseys, where are they to be found? Are they to be found in the Ayrshires?

Dr. LORING. Yes, sir.

Mr. GOODMAN. To a small extent.

Mr. ELLSWORTH. Grades.

Mr. HYDE. I have not found these qualities in Shorthorns. I should not advise any man to go into Shorthorns as butter producers. Take the largest-sized and best-formed Jerseys you can find, and I don't believe there is a stock of cattle known to us that will give us butter of such uniformly good quality, or so much to a quart of milk. Gentlemen talk about twelve or fifteen quarts of milk to a pound of butter. I believe that with Jersey cattle you will not require over nine quarts to the pound, and you may follow it right through the season. I believe Mr. Converse gave me figures far below that, something like six and three-quarters or seven quarts to a pound of butter.

Now, such animals can be produced. It costs no more to feed them than others. Mr. Ellsworth feeds his cattle in the right way. Take care of them; make a business of it. Do not do it in the shilly-shally way that thousands of farmers do; but do it thoroughly, systematically, as if you meant to make a business of it. What I want is, to call the attention of the farmers of Massachusetts to the important point of producing

the best butter, that will bring the highest price in the market, and securing the breed of cows that will do it.

Dr. LORING. I did not hear Mr. Ellsworth's essay, but I think it must have been a very sensible and a very interesting one, because I find that almost every man who attempts to deal with it, starts off on his own account, but ultimately comes back to the essay itself.

There are one or two matters upon which I desire to make a few remarks. The first is, in reference to the flooring upon which cattle should stand. I think it should be as level as possible. Cattle and horses should stand on a level floor; if anything, the floor on which a horse stands should fall off at his fore feet rather than his hind feet. The fall for the water should be underneath the floor upon which the animal stands. If you are stabling cows, the fall of the water is provided for by nature; but if oxen or horses, the fall should be underneath the floor. The floor should be made open, in such a way that the water will flow underneath the floor upon which the animals stand, on to a sloping floor, down which it can fall. It is a very easy and simple thing to do. I mention this, because I have made a business of studying floors, and I am sure that many forms of lameness in horses are attributable more to badly constructed floors than to any other cause.

In regard to the animal which makes the best butter, I do not believe that there is any one special breed which will make what would be universally recognized as the best butter for market. I think Mr. Ellsworth need not be ashamed of his grade Shorthorns as butter-making animals. They give a large amount of milk, I grant, owing to the abundance of the feed they find upon the Barre pastures; but I know perfectly well that there are in Barre and other towns where grade Shorthorns are used, cows that are admirable butter cows,—good animals for every dairy pasture. It is so with the Ayrshire. If you put a grade Ayrshire, or an Ayrshire, or a grade Shorthorn, or a common native cow, upon a good pasture, especially adapted to the purpose of making butter, if she is a good cow, she will make a pound of butter from eight and a half to ten quarts of milk, or twelve, perhaps. I have myself a grade Ayrshire cow, fed on winter feed, that made a pound of butter from eight quarts of milk. These cows are not common, but they can be

found in almost every breed we know of. That the Jersey cows make a pound of butter from less milk than any other cow, except the Devon, I have no doubt. I think the Devon and the Jersey carry with their milk more of the butteraceous quality than any other class of animals we have. But the difficulty to which Mr. Hyde alludes, with regard to Jersey butter, grows out of the fact that it is so loaded with butteraceous matter that it is difficult to transport it. You will find a great many hotel-keepers, in various parts of this State, who complain of Jersey butter, which would be admirable could it be eaten upon the farm where it is made, but which, before it reaches the market, is utterly worthless. They complain that it will not keep as long as other butter will.

That brings me to the great point in this butter question—the difficulty in transportation. If Mr. Hyde lived upon a farm, and had a good, intelligent butter-making woman, or wife, or daughter, who understood exactly the old-fashioned mode of making butter, and it was taken from the dairy room to his table, he would find no fault with it; he would not know any difference between Orange County butter and Berkshire or Worcester County butter. If he could eat it in the place where it is made,—if it is made with care, so as not to absorb any noxious gases, or any of the odors that gather around a stable or cellar, (for butter absorbs everything with the utmost rapidity), he would find no difficulty in getting good butter. The difficulty is in transporting from one place to another. I know from experience that Mr. Ellsworth has good butter on his table. I know that before cheese factories came into vogue, he had good cheese on his table; how it is now, I won't undertake to say. But if a box of his butter were brought from Barre to Salem, and he should try it there, he would never recognize it as his own. I think it is hardly possible to get a firkin of butter fifty miles from the country, in the heat of summer, for instance, and have it come out exactly as it was when it started. The process of transportation, the agitation of carrying it from one place to another, the effect of changes of temperature upon it, the heat of summer and the cold of winter, the effect of placing it in a freight car, one or all of these causes have deteriorated its quality. Have we not heard, in old times, when we had no railroads, often with a sort of sneer, about “store butter”? The

difficulty was, that the butter had absorbed all the odors of the store, and there are those here who know that the odors of an old-fashioned grocery store were somewhat rich. It is the difficulty of transportation therefore.

Mr. Hyde says he makes a portion of his own butter; but those of us who purchase our butter must take it for granted that we must labor under the same difficulty as those who purchase their fruit and vegetables. You cannot get anything from the farm to market, and through the market into the mouth of the consumer, precisely as good as it is when it is used on the farm where it is grown. Everybody knows that vegetables brought from a distance are no more the vegetables they were when they started than chalk is like cheese.

Mr. HYDE. Can't we have a better butter?

Dr. LORING. We have more good butter than you think. The difficulty is in getting it from one place to another, and in getting it through the hands of the middlemen. We must, therefore, exercise our own ingenuity in selecting, or else return to the difficult and somewhat extravagant business, as some of us know, of keeping our own cows and making our own butter.

Mr. HYDE. That I am going to do.

Dr. LORING. I have made in different parts of Massachusetts, arrangements for the delivery of butter in the most rapid manner; but I never could get it from a farm in Western Massachusetts, for instance, into my own house in a perfectly good condition.

Now, in regard to feed. That is another thing we must submit to. We cannot have everything as we would have it. We cannot make a new pasture out of an old one. We cannot make all hay-mows alike, and meal gets heated going through the markets. It is the same difficulty which attends the transporting of butter from one place to another: the wonderful faculty that the animal economy has of taking up the flavor of different articles of food. It is so in the human system; it is eminently so in the domestic animals; and it comes in nowhere so readily and so rapidly as in those portions of the animal economy known as the milk and butter producing organs.

So we must expect to submit to these evils. We can, by exercising a little ingenuity, get rid of them in part. Feeding

roots directly after milking will, as Mr. Ellsworth says, prevent the flavor getting into the butter somewhat ; but we cannot avoid it entirely ; we must submit to it.

So in regard to other evils which have been alluded to here. The subject of cows losing their calves has been discussed. The whole medical corps of the State of New York undertook to investigate it, and they came to no conclusion except this : that there are almost as many causes as there are localities and herds. A little musty hay ; a sudden change from one kind of food to another ; putting cattle from meadow hay on to good pasture in the spring of the year ; half starving them to death in winter. I have been taken into many a stable in New England, where, with tears in their eyes, the unfortunate owners would show me half a dozen young cows that had lost their calves in the month of January, and for the simple reason that they had been reduced to such a condition by short feeding, that they had not vitality enough to hold the foetus. A sudden change of wind, a thunder storm, a brutal, vicious blow by a herdsman, a single ugly cow in a herd, any sort of mental agitation will cause it. A cow is as susceptible as any other female animal to all these influences ; and when abortion makes its appearance in a herd, no one can tell where it will end. And the remedy is as various as the cause. The cause can only be ascertained by careful observation by the farmer on his own farm. But uniformly good food,—proper food,—quiet, good judgment, and proper care and warmth, will generally carry a herd of cattle over most of these difficulties.

Mr. Root, of Barre. I desire to invite Mr. Ellsworth to state his method of preparing his butter for market. Dr. Loring, in his very sensible remarks, has alluded very pointedly to the deleterious effects upon butter caused by its transportation to market. I desire to invite Mr. Ellsworth to state his method of transporting butter from his home to market, which I believe is the most practicable and sensible method I have ever seen adopted.

Mr. ELLSWORTH. I have seen very much said in agricultural papers about butter and cream being taken into bad places. I have heard it said that cream, before it was taken off was more sensitive than butter, but I hardly think that is so. I will give my experience on that.

This was my first season of making butter. I have as good a butter room as I could arrange, but I found, after the weather became somewhat hot, that the sun struck upon one side of the building so that the boards were quite warm. I cut a large quantity of black and white birches, and placed them against two sides of my butter room, to prevent the sun from striking it. I have windows on all sides, and those were let down. This, you will remember, was in extremely hot weather; so much so, that I kept the windows open night and day, except in the middle of the day, when they were shut. It worked admirably, and I was very well pleased for a few days. But after the birches became wilted, one foggy, damp morning, as I passed into the butter room, I noticed that I smelt the birches very plainly. I thought the cream might partake of that flavor. I skimmed and tasted some of the cream, and true enough, the birch was there, and in the cream that adhered to the pan, I could taste it as plainly as you could if you chewed the twigs. I thought I was stuck, sure. I was making some 120 or 130 pounds a week at that time. We churned the butter as usual, and to my surprise, the buttermilk had that flavor, but I could not detect it in the butter. The butter came to Boston to Mr. Hovey, and I got my usual price. There was not a word said about anything wrong in that lot. That satisfied me that cream is not so sensitive as butter. I thought that was very good proof that the butter globules did not receive that odor, so that when they broke, the buttermilk took the flavor.

Now, in regard to transporting butter. My whole aim is to keep it from the air. I do not want any kind of air to reach it. If it is pure air, it will abstract the sweet flavor; if it is bad air, it will do harm, of course. I cover it from the air from the time it is salted until it is worked. Then it is boxed as soon as it can be, and covered. I have three different sizes of boxes. My shipping-box is something like an old-fashioned tool-chest, and holds four boxes of thirty pounds each. The shipping-box is two boxes high and two boxes wide. They are the common round butter boxes, but the shipping-box is a square box, with handles at each end. A rod comes up at each end, and there is a thumb-screw outside on the cover. Listing, such as comes on the sides of cloth, is tacked around the edge of the box. When the cover is screwed down, the box is pretty tight. You will

see that there is a vacant space between the two boxes, something like a three square. I had two galvanized iron boxes made, three square, or nearly so, that just fit into that cavity, and these are filled with broken ice, about the size of a hen's egg. These boxes are filled with ice, the butter put in, and the cover screwed down tight, about six o'clock in the morning, in hot weather. I meet the express train at West Brookfield at twenty minutes before eight, and my butter gets to the stall of Mr. Hovey at half-past eleven. Mr. Hovey says that two-thirds of the ice is in the boxes, and the butter, I have been told, is apparently as hard as when it started. I think if there had been a cross road direct to Salem, the Doctor could have got a little taste of my butter just as good as at home.

Dr. LORING. That is delivered where?

Mr. ELLSWORTH. To Mr. Hovey, in Faneuil Hall market.

Dr. LORING. Suppose the consumer lives at the South End?

Mr. ELLSWORTH. I am not responsible for it after it gets into a middleman's hands.

Dr. LORING. There is where the difficulty comes in.

Mr. ELLSWORTH. The butter in that way comes into market perfectly sweet and fresh as it starts from home. I think any one can send butter in that way.

Mr. GOODMAN, of Lenox. This subject, it seems to me, is a very important one. I merely want to sum up a few ideas on the subject. I think my friend Dr. Loring states it rather too strongly when he says that all the bad qualities of the Jersey butter that comes to this market are owing to its having been transported. I have no doubt that butter is somewhat injured by transportation, and perhaps Jersey butter a little more than other kinds, through its richness, but I do not believe that is the main difficulty with Jersey butter or any butter. The great difficulty, it appears to me, is in butter making, and if this essay of Mr. Ellsworth could be distributed all through the country, among the farmers, we should get a great deal better butter than we do now. It is just as it is with bread-making. You cannot go into any family, even in New England, and find throughout the year uniformly good bread; and if you go West or South, you find it very bad. It is not because they have not good materials, but because there is no uniform system of making it. In Europe it is reduced to a system, so that it is always good.

You never find in Germany or France any such thing as poor bread. The reason is, that the thing is managed systematically. They understand of what materials it should be made, how it should be made, and when it should be made; and they know if it is not good, it is quite a loss to their pockets. The difficulty with our butter is, that it is made upon various systems, and until we get some method of making it as we do cheese, I do not believe that we shall have uniformly good butter; but, at the same time, by the distribution of such information as is contained in the essay, we shall have a great deal better butter.

We have in our region two prominent kinds of butter. We have good butter, and then we have what is called "Irish butter." It is called "Irish butter," because it is made, to a large extent, by those people,—very clever men, some of them are,—who are coming in and usurping the New England farms. They do not make the good butter that our American women used to make. That is brought to market and becomes "store butter," because the store-keepers mix up the various kinds of butter they receive in one tub, and so it is sold. That is miserable butter. While we are getting fifty or sixty cents for good butter, this ordinary butter cannot be sold for over fifteen or twenty cents.

Now, as to Jersey butter. It seems to me we ought not to be frightened by the idea conveyed by Mr. Hyde. I apprehend that it is well settled that for butter-making, there is no class of animals equal to Jersey cows. There is no class of animals that produce like from like as regularly as do the Jerseys, consistent butter-makers. I admit that there is no better class of animals in the world than the old native stock of New England. I have had in my dairy as good native animals in every respect, as any thoroughbred; but the difficulty is, that when you get a cow of that kind, she may have a dozen calves, and there will not be one that will be like the dam. Now, if you have a Jersey cow that is a good butter-maker, and you have a bull to match her, you are certain that her progeny will be like her. Why is it, if the Jerseys are not the best butter-makers, that their butter is commanding the highest price in our market? There may be bad butter from Jersey cows sent to this market;—bad, not because it is Jersey butter, but because it is badly made or badly transported. But is there any butter but Jersey butter

that is sent to New York, and sold for \$1.25 a pound; or sent from Berkshire County to Boston hotels and sold for 75 cents? Three-quarters at least of the butter that is sold in this city, in New York and Philadelphia, for from 75 cents to \$1.25 a pound, is Jersey butter, and I do not know that there is any other. That butter brings that price because it is well made. The gentleman who sends it from my region and gets 75 cents a pound has one of the best butter-making women I ever knew. His establishment is complete in every respect. His cows are regularly fed, and most important of all, they are well cared for, curried and cleaned, and their stable is in such a condition that those peculiar aromatic flavors which disgust gentlemen when found in butter, and which generally come from stables, are not intermixed with his butter.

I say, therefore, having tried the various breeds, having read about them and examined them, I do not believe that we shall find any better butter-makers than Jersey cows. But, sir, my main point in this matter is this: that what we want throughout the State is a more general dissemination of information as to how butter should be made, how cows should be fed, and particularly how they should be taken care of and cleaned. The gentlemen who come here know how their stables are kept. The most intelligent farmers generally come to this Board, and they almost all, after having been here, come to believe that the cows all through the country from which butter is made, are nicely and cleverly taken care of. But when you go through our rural districts, you will find that that is not the case; that in the majority of cases, the cows are so bedded, there is so much manure around them, so little attention is paid to cleaning them, when they are milked, that you cannot wonder the butter is poor. When you get the information of which I have spoken disseminated, and get a more uniform system of butter-making established, you will see a marked improvement in butter-making.

Mr. ALLIS, of Conway. I am acquainted with one fact which goes somewhat to show that the name or stamp upon butter, frequently goes a great way in the market. A gentleman from Berkshire County, by the name of White, some years ago, moved into York State, near Orange County, and kept a large dairy. He sent his butter to the Chicago market, to a gentleman who happened to be dealing in that article there,

<i>Worcester West,</i>	.	.	.	.	.	.	H. CONVERSE.
<i>Worcester North,</i>	.	.	.	.	.	.	J. LADD.
<i>Worcester North-West,</i>	.	.	.	.	.	.	E. W. BOISE.
<i>Worcester South,</i>	.	.	.	.	.	.	N. P. BROWN.
<i>Worcester South-East,</i>	.	.	.	.	.	.	R. H. LEAVITT.
<i>Hampshire, Franklin and Hampden,</i>	.	.	.	.	.	.	L. SALTONSTALL.
<i>Hampshire,</i>	.	.	.	.	.	.	JOS. N. STURTEVANT.
<i>Highland,</i>	.	.	.	.	.	.	T. L. ALLIS.
<i>Hampden,</i>	.	.	.	.	.	.	LEVI STOCKBRIDGE.
<i>Hampden East,</i>	.	.	.	.	.	.	T. P. ROOT.
<i>Union,</i>	.	.	.	.	.	.	F. F. FAY.
<i>Franklin,</i>	.	.	.	.	.	.	J. McELWAIN.
<i>Deerfield Valley,</i>	.	.	.	.	.	.	W. KNOWLTON.
<i>Berkshire,</i>	.	.	.	.	.	.	E. STONE.
<i>Housatonic,</i>	.	.	.	.	.	.	A. P. PECK.
<i>Hoosac Valley,</i>	.	.	.	.	.	.	N. S. HUBBARD.
<i>Norfolk,</i>	.	.	.	.	.	.	A. FEARING.
<i>Bristol,</i>	.	.	.	.	.	.	M. P. WILDER.
<i>Bristol Central,</i>	.	.	.	.	.	.	C. G. DAVIS.
<i>Plymouth,</i>	.	.	.	.	.	.	A. P. SLADE.
<i>Marshfield,</i>	.	.	.	.	.	.	O. B. HADWEN.
<i>Hingham,</i>	.	.	.	.	.	.	G. B. LORING.
<i>Barnstable,</i>	.	.	.	.	.	.	A. M. MYRICK.
<i>Nantucket,</i>	.	.	.	.	.	.	W. S. CLARK.
<i>Martha's Vineyard,</i>	.	.	.	.	.	.	W. BIRNIE.

The report was adopted and the assignment made accordingly.

Mr. GOODMAN then submitted the following report on the

AGRICULTURAL AND HORTICULTURAL EDUCATION FOR WOMEN.

Mrs. Cheney, in her address at the meeting of the Board at Fall River, has treated the subject of the horticultural education of women with such fulness and appositeness, that it may seem a work of supererogation, at least, for one of the masculine gender to attempt to glean the field over which she has traveled; but, perchance, as the topic at the head of this essay has been assigned to your Committee, it may not be presumptuous to attempt to enforce the views presented by Mrs. Cheney with a few considerations from a different stand-point.

M. De Tocqueville, the acutest observer of our institutions among the mass who have ventured to record their criticism on the democrats and democracy of America, compliments us by saying that our singular prosperity and growing strength is owing

mainly to the superiority of our women. It is worth while to consider for a moment in what that superiority consists, as germane to the subsequent inquiry whether it will be lessened by an education in provinces commonly considered to belong exclusively to man. This superiority may be sexual, or as contrasted with the condition and qualities of females of other countries, and it is the latter phase to which the political philosopher undoubtedly alludes. The *right* of woman to labor is common to the old and new continents, but women have not been, as a class, *doomed* to labor of a degrading or unsexual nature, under the free institutions of the United States, and no traveler from hence can record in his note-book, as Senator Wilson did in his, during his tour abroad last summer, of Ayr, in Scotland, that he saw seventeen women hoeing in a field, and a man, without a hoe, overseeing them !

No women are seen here, as in Germany, working with barrows on railroads, carrying coal, or mortar in a hod up a ladder to the tops of six-story buildings, nor, *horribilé dictu* ! yoked with dogs, bulls and cows ; nor is the hermaphrodite class, called by Count Gasparin “female men,” yet common among us, though a few specimens occasionally crop out just to deter us from desiring or fostering their increase. In Europe, generally, the right of woman to labor is not only conceded, but the right of man to live in idleness upon the fruits of such labor is acquiesced in, and as shop-keeper, stall-tender, street-cleaner in France, outdoor laborer at all employments in Germany, Switzerland, South of Europe, and even in England, and also there as hotel-keeper, boarding-house and lodging-room tender, woman assumes the occupations of the other sex, and is substantially the head and support of the family, performing that daily toil for bread, which is man’s inheritance, and which he cannot without infamy impose upon his helpmeet, thus compelling her to bear a double curse for the original sin of both.

We have not as yet confounded together the different characteristics of the sexes, making man and woman into beings not only equal but alike ; much less have we turned women into inferior beings, fit only as companions for those whom she, equally with man, was created to rule over, but conceding her equality in the highest sense, we have admitted the wide differences between her physical and moral constitution and that of man, and

so apportioned the labors of life, that, whilst the outward affairs, the rough and hard work should fall upon the man, the domestic employments are peculiarly the province of the woman, and sufficiently engrossing to preclude her from a desire to travel beyond their limits ; and consequently our females present that delicacy of manners and appearance, and strangers would not find it difficult, as among the Esquimaux, to distinguish the woman from the man. Of course exceptions occasionally form the rule, and we discern, yoked together, specimens of humanity showing sexual differences by the garb ; but the grey mare is the better horse, and the domestic carriage, with its entire load, is carried along by the more spirited animal.

“ The fact is,” said one of these superior beings, “ a man does not know how to straighten up things. He does not know where to commence. I don’t wonder that when God made Adam, he went right to work and made a woman to tell him what to do !”

Physiology demonstrates that woman is not so constituted as to compete with man in physical labor, and the history of woman in all ages forces us to the conclusion that the qualities of her mind are different from that of man, leading her to reason intuitively, instead of plodding through logical arguments ; consequently she is rarely a constructor or inventor, but her faculties are especially adapted to arranging and beautifying what is constructed, in assisting man in his improvements, but preserving in all she does her sexual significance, and her equality and independence, as neither sex can dispense with the other.

Will the education of women in agriculture and horticulture in any way interfere with this divine adjustment of the sexes ? I trow not, for various reasons ; the chief of which is, that the mere education in the theory of any employment, or even such practical application as may elucidate the theories, does not imply that the hard work, or actual labor, is to be performed by the neophyte. The vast businesses of our country are directed in the closet or the counting-room, and many of our successful agriculturists carry on a thriving employment without putting hand to plough, or any where except in the pocket ; and the luxury of farming is not considered inconsistent with the

refinement or white-kiddedness of the most delicate of the male sex.

Warriors like Xenophon, philosophers like Cicero, statesmen like Burke, Washington and Jefferson, and poets like Horace, have combined the pursuits of agriculture with more engrossing cares, and if all could but describe themselves, as did the latter, *Satis beatus unicus Sabinis*,—

Completely blest
With a happy little Sabine nest,—

they reaped from the employment a wholesome recreation, and endorsed the worth of a business on which, more than any other, the fortunes of a country, moral, political or national, essentially depend.

Mrs. Adams, the wife of John Adams, whilst he was absent from his country as a joint commissioner to France, remained at home, and managed, as she had done during his necessary absences at the seat of government, the affairs of the household and the farm.

Rev. Henry Coleman, in his narrative of his agricultural tour in England, gives a fascinating account of a visit to a large estate, where the lady of the manor was the presiding genius, and herself conducted him through the cattle yards and pens, and showed an entire familiarity with the breeds and characteristics of the occupants; and Lady Pigot is known at the present time as one of the best breeders of Shorthorn cattle in England, rivaling in the prices she gives and obtains for her cattle the munificence of her British and American male competitors.

The best farm in England is reported as kept by a woman, and as having taken the first prize recently offered by the Royal Agricultural Society. It is a farm of 400 acres, devoted to pasture, grain and stock. Only four horses are kept, yet such was the admirable system of management, they were sufficient for the cultivation necessary for 70 acres of wheat, the same of barley and turnips, besides some oats and beans. The produce sold, was, 80 three year-old steers, and 200 fat sheep, all raised on the farm; 2,450 bushels of wheat, and 3,290 bushels of barley, which realized \$15,895, besides other produce, as pork, wool, butter, cheese, etc. Early in July the turnips nearly covered

the ground, and on 72 acres of them the examiners saw *no weeds*; in fact, the whole farm was perfectly free from them. Twenty tons of guano, bonedust, etc., were used each year.

These instances are sufficient to show that even agricultural pursuits may be prosecuted successfully without manual labor on the part of the owner, and without in any way detracting from the social position, or infringing upon the delicacy of either sex.

The history of nearly every patriotic State in the Union abounds in incidents of young women during the rebellion usurping *ex necessitate* the rights and privileges of the fathers, husbands or brothers who were at the front, and not only directing the operations of the farm, but carrying on the various processes in person, riding the machines, loading and unloading hay, hoeing and reaping; and the cases are not rare at the West of females now managing and cultivating farms as a pursuit more agreeable to them than indoor employments; and taking into consideration the machinery by which farming is now carried on, the comparatively slight amount of severe manual labor requisite, and which can be hired for the emergencies, these women farmers may find it a more satisfactory business than many trades followed by women, and the labor on the whole less severe.

"There appears," says Sir Humphrey Davy, "nothing more accidental than the sex of an infant. Yet take any great city of any province and you will find that the relation of males and females is unalterable." This dictum of the philosopher is substantially correct, and it is apparent that an unerring intelligence so adjusts the balance of the sexes, that were it not for the wars and emigrations of man a helpmeet would be found for each of the male sex as for his great progenitor, and the sacred institution of the family would thus enfold the whole human race; and this being the normal condition, it is proper before deciding as to the effect of any class of education upon those abnormally situated to examine its appropriateness to the majority. It is conceded that the great need of women at the present time is a more substantial and domestic education. Personal adornment a century ago was the foible of both sexes, but the men have sacrificed mere show to substance and comfort, whilst the women, if any change has taken place, have rather increased their fondness for rich habiliments. Somewhat parallel to this

has been the education of males and females, the former striving for more practical knowledge, and the latter yet preferring the ornamental to the useful; and whilst our colleges for boys have added to the old curriculum many studies more directly bearing upon the arts of life, the schools for girls have continued showy and pretentious, and the best education our daughters obtain is that at home, where their moral and social nature receives the highest graces of vigor and refinement, and they are taught the domestic accomplishments appertaining to the due economy of the household. Primarily, the education of the man is, or should be, to prepare him to attain property, position and influence; that of the woman should be to prepare her to second his efforts by her understanding and advice and assistance, so far as it is within the scope of her ability, and does not trench upon her own peculiar duty, and also to prepare her for those duties. "To prepare us for complete living is the function which education has to discharge; and the only rational mode of judging of an educational course is to judge in what degree it discharges such function." Assuming, therefore, as we should, that every boy will become a husband and parent, and every girl a wife and mother, why should there be a parting of the ways when each leaves school, and why should the intellect of the male continue to be fostered and strengthened, whilst that of the female is neglected and her further education substantially abandoned? It is no answer to say that her endowments and adaptations are not the same intellectually as those of the male, because the same may be said of the bodily functions; and yet both sexes partake of the same sort of food, and our natures, which assimilate such provision according to the requirements of the system, will do the same with the mental pabulum. Even the advocates of the origin or improvement of species by artificial methods do not carry their theories so far as to assert that any changes can be permanently made in the distinctive attributes of the sex; that among the feathered songsters of the grove the music shall issue from the throat of the female instead of the male; that the brilliant plumage shall, as among bipeds of the human race, be the peculiarity of the feminine gender, or that any style of feeding or natural selection can give vocal charms to the dumb wives of the grasshoppers. Neither will education alter the natures of man or woman as

the complement of each other ; but he will retain his stirring, practical, inventive and mechanical faculties, and she her intuitive affinities for the true, the beautiful, and the good ; and the great benefit of an equal education will be to them, that the wife can more understandingly employ her divine faculty of counsel, her all-pervading influence ; and the husband when discouraged by ill success, or unable from his own suggestions to solve the difficulties of the problem of life, may, from her more spiritual perception, receive suggestions which shall enable him to see his way clear. But the great glory of the woman as a thing distinct from that of the man, is her maternity ; her great privilege of nourishing and educating the human race ; for the early education which the child gets at home is the planting of the seed which springs up under all circumstances, and though crowded out for a time by other vegetation, will through life show itself like those bushes and trees which start up after the denuding of forest lands by the axe or fire ; sometimes mere brambles and worthless brush, more often of great lasting value. What more lamentable sight than that of a young mother unfolding a human character committed to her charge, whilst she herself is profoundly ignorant of the phenomena with which she has to deal, knowing nothing of her own, much less of the child's functions, ignorant of the effects that will be produced by this or that treatment, and proceeding with the management of this wonderful specimen of God's handiwork in much the same manner as a quack doctor with his patient, trying all things and in many cases finding the surest remedy for all ills in the ohurchyard mould ?

It was a witty and handsome jeer which Aristippus bestowed on a sottish father, by whom being asked what he would take to teach his child, he answered, A thousand drachmas ; whereupon the other crying out, O Hercules ! how much out of the way do you ask ! for I can buy a slave at that rate. Do, then, said the philosopher, and thou shalt instead of one, purchase two slaves for thy money ; him that thou buyest for one and thy son for another. Somewhat after this manner is the husband sold who obtains for the mother of his children a wife without education, and intrusts to her care and almost exclusive attention, their destinies during adolescence, and does it not follow that if a good mental and moral training is necessary for the male adult in

after-life it is equally necessary for the female adjunct? and if the last stage in the mental development of each man and woman is to be reached only through the proper discharge of the parental duties, there should be equal preparation for the performance of such obligations.

But, after all, these arguments might have been considered necessary in the eighteenth century when, if the incisive pen of Lady Mary Wortley Montague indites the truth, men debarred her sex from the advantages of learning, fancying that the improvement of their understandings would only furnish them with the more art to deceive the male sex, and because the males flattered themselves that the females were really of inferior rank; and the Lady Mary was persuaded that if there was a commonwealth of rational horses (as Dean Swift has supposed), it would be an established maxim with them, following the cue of their masters, that a mare could *not* be taught to pace! In the nineteenth century we have progressed far beyond this, and whatever differences of opinion there may be as to woman's right to vote, and the propriety of her taking part in public affairs, the majority of intelligent male citizens are agreed in opinion that women are by natural right entitled to all the advantages of education enjoyed by men, and that whatever difference there may be in the faculty of production, in the faculty of acquiring knowledge there is no difference between the feminine and the masculine mind.

“On the cultivation of the minds of women depends the wisdom of men,” said Sheridan. “The future destiny of the child is always the work of the mother,” said Napoleon. And even for her own sake, woman is as much entitled to an education as her brother, for no entertainment is so cheap as reading and study, no pleasure so lasting, nothing so moderates the passions, nor teaches one to be contented at so small an expense as knowledge; and though the ultimate end of the education of a woman is to make her a good wife and mother, it will have the effect of rendering a virgin state happy, and as in the one case it will not interfere with the indispensable requisite of every American wife and mother to know how to order and regulate the family, how to govern the domestics and train up her children, but rather insure a more wise judgment in those prerogatives, so in the other case, a proficiency in letters will not detract from the

mildness, humility or modesty of the maiden, but add to her pleasure, contentment and usefulness.

Applying these self-evident truths to the subjects of this essay, and realizing that the study of agriculture comprehends a knowledge to be acquired of all the sciences, that there is scarcely a branch of science it is not necessary a man should possess to be a successful farmer, we can see every reason why the women who are to be the farmers' helpmeets should pursue the same studies that he does, and thus retain through life their intellectual equality, and be the better able to coöperate with the husbands in scientific agriculture, by judicious and understanding advice and suggestion, and implant in the young minds of the coming generations that love for a study of their calling which will develop it among the foremost sciences, and carry it forward to a point of progress and pecuniary success undreamt of by their fathers. Even those persons of experience in training youth, who have laid out a curriculum of studies to be pursued in the education of women, embrace within it nearly all those pursued at the Agricultural College of this State, claiming that for them "the female mind possesses peculiar aptitude, as the faculty of observation is more readily developed in women than in men, and they possess in a greater degree the genius of manipulation."*

"My dear, will you play your thousand dollar polka?" said a farmer to his charming daughter, six months after her return from a fashionable boarding-school. The young lady's musical performances had dwindled piece by piece to a solitary polka, and the fond parent's sole compensation for his many years' outlay was the precious "thousand dollar polka." The same amount of time and money expended on the education of a farmer's daughter at an agricultural college, would produce more permanent results, and fond parents would not have to grieve, as the custom now is, over the misappropriation of their hard earnings.

If the United States is the land of modern chivalry where the moral qualities of woman are most highly valued, and her station in society fully acknowledged, and if, as M. de Tocqueville asserts, our advancement in prosperity and civilization is owing largely

* Dr. Hedge in a late address on the Education of Women.

to the superior character of the female sex, we can only retain this high eminence by constantly enlarging their intellectual sphere contemporaneously with that of the other sex.

And whilst we have no fear that there will be any such reversion to barbarism as the compulsion of American women in any class to perform the rough labor of the fields, there is a well-grounded distrust that unless the future mothers of our agriculturists take a higher view of the calling of their husbands and sons, the latter may not pursue it with the ambition and knowledge requisite to its complete success. But if they are instructed in the arts of agriculture and its kindred sciences, we may hope to see our farmers' wives coöperating with their husbands in the management of the farm, and instructing their sons in the elements of that scientific knowledge which will give such a different hue to their employment; whilst to themselves untold benefits will accrue from the substitution of useful knowledge and subjects of mental investigation for the idleness, sauntering gossip, frivolous reading and other modern female dissipations; and even the coarse and common things—the meat, drink and household cares—will be elevated by the different spirit in which they are ministered by the educated woman.

R. GOODMAN,

For the Committee.

The Report was accepted.

Mr. STONE, from the committee appointed to consider the report upon the time and place of holding the country meeting of the Board, reported in favor of holding it at Barre on the 12th, 13th, and 14th of November.

Mr. STOCKBRIDGE objected to this time as it would bring the meeting in term time at the Massachusetts Agricultural College.

Mr. CLARK then advocated holding the meeting on the 3d, 4th, and 5th days of December. This amendment having been carried the report as amended was adopted.

Voted, That Hon. Marshall P. Wilder and the Secretary be appointed delegates from the State Board to the Convention called by the Commissioner of Agriculture, to be held at Washington on the 15th inst.

Mr. GOODMAN then submitted the Report of the Committee appointed to consider and suggest a list of subjects for investigation and essays, as follows:—

Field and Garden Seeds.—Messrs. Moore, Hyde and Wilder.

Cultivation and use of Forest Trees.—Messrs. Clark, Stone and Durfee.

The use of Steam on the Farm.—Messrs. Stockbridge, Hadwen and Fay.

The relative value of Farming among the occupations of Life.—Messrs. Hubbard, Slade and Sturtevant.

The importance of providing other Food for Cattle than Pasturage.—Messrs Goodman, McElwain and Root.

This Report was adopted.

Voted, To appoint a Committee to make arrangements for the meeting at Barre.

Messrs. Root, Hadwen, Hubbard, Fay and the Secretary.

Mr. STOCKBRIDGE then presented the following paper upon the

AGRICULTURE OF EASTERN HAMPSHIRE.

Although the Hampshire County Agricultural Society is not limited by statute to any particular territory, and has efficient members, receives contributions, and dispenses premiums without regard to county lines, the real field of its operations is in Eastern Hampshire, and comprises the ten towns of Hadley, South Hadley, Amherst, Granby, Pelham, Belchertown, Enfield, Prescott, Ware and Greenwich. The country is drained by the Connecticut River and its tributaries, and has a slope to the west and south-west. Its elevation above tide-water is from six to seven hundred feet. Much of the surface is broken and hilly, and it has mountain ranges running north and south. The general mountain line is intersected by the Holyoke range, running east and west, some of whose most prominent points are between eleven and twelve hundred feet in height. It embraces an area of 113,893 square acres, and contains a population of 19,447, who are almost exclusively engaged in agriculture. It has but two manufacturing villages of any size or note;—South

Hadley Falls and Ware Village. The geological formation of the region is principally gneiss, but sandstone and trap exist to a limited extent. The general character of the soil is drift composed of the abraded materials of the granite, slate and limestone rocks of Franklin County and Vermont. This debris has been sorted by water currents and specific gravity, so that we have distinctive soils, of clay, sand and gravel, and soils of varying characteristics of which some one of these substances is the predominating base. Along the streams, but especially bordering the Connecticut in Hadley and South Hadley, are more recent deposits of alluvial soil which form extensive meadows of great and enduring fertility.

The aborigines had settlements on the streams, their hunting grounds were the adjacent hills, but they cultivated the river bottom quite extensively with corn, and so important did they consider this cultivation, that when they deeded it to the settlers, sixteen acres were set apart and described by metes and bounds, which they were to have to grow corn upon four years, during which time they were to prepare other corn lands farther up the river. The first settlement of whites was made here in the year 1658. The land was honestly purchased of the Indians, honestly paid for, and was conveyed by deed in due form, and recorded. The settlement was at the place now known as West Street in Hadley, but the township embraced nearly all the territory now included in the towns of Hadley, Hatfield, Amherst, South Hadley, Granby, Pelham and Belchertown. The outlying lands of the purchase were taken up and settled upon soon after, but the Indian war stopped all expansion and drove the settlers into the stockade or to the adjoining lands, to remain until peace was secured by the practical extermination of the Indians. Within fifty years of the first settlement at Hadley, nearly the whole territory of the ten towns was occupied by settlers. All that portion of the country lying east and south of what is now the town of Amherst, was originally covered with a dense forest, principally of hard wood, though the various varieties of pine were not uncommon. West of the line spoken of, to Connecticut River, there was very little forest, though much of it became wooded within a hundred years from the first settlement. The settlers were exclusively farmers and at once commenced agricultural operations, so that our lands have to a

greater or less extent been under cultivation for a period of about one hundred and seventy years. This cultivation at first was very rude, and in consequence of the circumstances of the people, was a struggle to wring subsistence from the soil without any regard to the preservation of its fertility. Necessity at first compelled to this course, but although the pecuniary condition of the farmers was soon much improved, but little change was made in their system of cultivation for a hundred years. Their staple products were wheat, rye, corn and cattle. In the wooded portion of the country the dense forests were felled, and most of them burned on the land, after which, with very poor cultivation, it for several years annually produced crops of grain of from thirty to forty bushels per acre. A large proportion of these lands, which from their rocky or precipitous character it was difficult to cultivate, were then devoted to the growing of stock and the feeding of milch cows. Other lands which could be readily ploughed, were, from father to son for generations, kept under triennial rotation with cattle or sheep, and grain, two years in pasture, and one in grain, blindly trusting in Providence, and their sheep, to keep up the land while they sent all its products away. After the settlers had become secure in their possessions, and prosperous, large quantities of their grain products were transported down the river to Hartford and across the country to Boston and thence to a foreign market. They always sent to market large numbers of cattle, and eventually dairy products, but during the first fifty years of the present century kept most of their grain at home, using it to stall-feed cattle. At different times their system of cultivation has been varied by the introduction of other crops. Flax was cultivated early and for a long time, and hemp and teasles have been grown to some extent. About the commencement of the present century began the cultivation of broom corn, both as a money crop to be sold and to produce stock feed. Its cultivation was profitable, and as its seed and stalks were left, it was not exhausting to the land. With the exception of hay it was the leading crop from 1830 to 1850, and was largely cultivated several years later. In 1855 the town of Hadley cultivated about a thousand acres of broom corn, but in 1865 it had decreased to less than one hundred, and at the present time its cultivation has practically ceased. The causes which led to a cessation of this busi-

ness were its extensive cultivation at the West, and the introduction of the more profitable culture of tobacco which began about 1850, and has been continually increasing to the present time. In 1855 the towns of Hadley, South Hadley, Amherst and Granby, cultivated sixty-eight acres of this plant, but in 1865 its growth had extended to all the ten towns named, and they had nine hundred and forty-three acres in tobacco. It is the universal opinion of that community that its growth has increased since that time, but the statistics of 1870 give us but nine hundred and twenty acres devoted to its cultivation.

In selecting farm lands in this section, the original settlers took first the highlands which were heavily wooded and had a dry soil, and then dry alluvial and the lighter class of sandy loams. The former after yielding a few crops of the smaller grains by indifferent cultivation, were devoted almost exclusively to grazing, and the latter from father to son were kept under cultivation to grain with partial rest from time to time by the growth of grass. For more than a hundred years these were the only kinds of soil used, and generally without any systematic rotation of crops, or any effective plan for preserving its fertility. When it materially deteriorated new resources were supplied by clearing and using forest lands, but only in modern times has there been any attempt to bring to the wants of husbandry the low, wet lands where are accumulated choice elements of fertility gathered from the adjacent country. The general system of cultivation pursued has gradually deteriorated the producing power of the soil. Some whole farms, and a very few acres on many farms having received special attention still yield crops as of yore, but as a rule Indian corn decreased from sixty to twenty-seven bushels per acre; rye from thirty-five to nine; wheat, which produced from thirty to forty bushels, is not grown except as a rare and pet crop. Hay fell from two to one ton per acre, and pasture which once carried a cow to two acres, required five acres to the cow, or it ceased to produce grass at all. Although a portion of this territory, which at its first settlement was cleared land and was afterwards permitted to produce forest, yet as a general rule the forest lands have been simply devastated. For more than a century the wood had little or no value, and it was swept away to make farms, or to get new rich land when the old failed, but in modern times the process

has been hastened by the great value of forest products. Until within the last twenty years, this forest clearing was followed by fire, the drag and grain to enhance the profits. During the last two decades land owners have been more provident, and to considerable extent, forest clearings have not been burned, and the land has been allowed again to produce wood, though without special care or culture. Much land also, in rocky, precipitous, exposed localities, which had been burned for grain after taking off the forest, from necessity, has been devoted to growing wood, so that our woodlands are now increasing, and there is a hopeful prospect that ere long our hills and mountains will be covered with forest. In 1865 these towns had 17,974 acres of woodland; in 1870 they had 21,536 acres. But though there has been a good increase of the number of acres there has been none in the cords of standing wood, and another decade of the present practice will be needed to produce that result. The value of our forest products now annually sent to market is about \$100,000. Although much of the area of these towns has special adaptations for the production of the cereals, yet stock husbandry, the production of beef and dairy products, has always been an important pursuit. The records do not state the fact, but there is the best reason for believing that the first emigrants to our oldest town (Hadley) brought neat stock, sheep and swine with them. The compact which was drawn up and signed just before they emigrated, by the "proprietors" who purchased the land, stipulated that each proprietor besides his "house lot," should have the right to put cattle in the "cow pasture." And very soon after the settlement, in adjusting their relations with the Indians, it was agreed on their part, that the Indians should have the right to hunt and fish on their unoccupied lands, and the Indians agreed that they "would not let down the fences of the inhabitants, or let the cattle and swine upon their fields, nor hunt or kill any cattle, sheep or swine with their dogs." As the settlers were from Connecticut, where they had traded much with the Dutch at Manhattan Island, and with the colonists in Delaware and Virginia, it is more than probable, that our first cattle were of Dutch and English origin, though the large number of yellow and brindle cattle in their progeny indicates that they after a time became mixed with the Danish importations to New Hampshire. During the latter part of the

last century some of the towns were noted for their extensive dairies, and up to the present time others are famous for the quality and number of their stall-fed cattle. Until within the last thirty years no systematic efforts were made for the better breeding or improvement of the neat stock. About that time Paoli Lathrop, Esq., of South Hadley, introduced the Shorthorns, and by skill and attention to the business he was so successful as to become known throughout the country as one of its best breeders. Others followed his lead and the blood of the breed was quite widely disseminated, producing so marked a change in the quality of our cattle, that in some sections a beeve at three years was as heavy as under the old order of things at four. Our agricultural society has endeavored to encourage the work of improvement, by offering large premiums for thoroughbred stock, and by introducing bulls and granting their use to the farmers. At the present time we have pure-bred animals of the Shorthorn, Ayrshire, Jersey and Devon breeds, and an infusion of their blood in our grades. It is doubtful whether we have so many cattle on our territory now as we had seventy-five years ago. Our farmers, to a great extent, have ceased to grow cattle for beef or work, and give their attention to dairy animals, but they are decreasing in number. The earliest statistics to which I have had access, show that excluding swine, the ten towns had in 1855, 17,399 domestic animals; in 1865, 18,731; and in 1870, 15,640. The number of horses in 1855, were 2,408; in 1865, 2,782; in 1870, 2,012. The working oxen in 1855 were 1,883; in 1865, 1,197; in 1870, 1,097. These figures show that while horses have decreased 896 in fifteen years, working oxen have decreased 786. Horses have been substituted for oxen as the working teams of our farms to a much greater extent than the figures would indicate. Formerly horses were kept for driving and breeding purposes; now but little comparatively is done in breeding, many of our horses come from abroad, and four-fifths of our farm work is done with horse teams.

For thirty years there has been a gradual decrease in the number of sheep reared and kept by our farmers, though stimulated at times by the high price of wool, there is a temporary increase. They are kept more for the sale of early lambs than for wool, and many thousands bought abroad are stall-fed here, which

are not returned in any statistics. The number of sheep in 1855 was 4,400, but in 1865 they had increased to 6,941, owing undoubtedly to the great increase of wool caused by the war, but the subsequent depression of the woollen trade caused their decline in 1870 to 3,477, or 923 less than in 1855.

The amount of hay produced in 1855, was 22,764 tons, but in 1870, it was 28,501. The statement has been made that the farm lands of this section of the State have materially deteriorated in fertility from their original condition, and the statistics show the kind and amount of decrease of farm products within fifteen years. There has been a material falling off in aggregate number of all domestic animals but horses and cows, and of all products but hay, dairy products and tobacco. The showing thus far, is a general break-down in the industry of agriculture, apparently a continued depreciation of soil, decrease of crops in consequence, and impoverishment of the farmer. Yet the fact is indisputable and beyond a doubt, that the agricultural community of Eastern Hampshire were never in so good condition as to-day. They have better houses and barns, better tools and implements, possess more of life's comforts and luxuries, are less encumbered with debt, have more absolute leisure, and do not tax their physical energies with such exhaustive labor as did their fathers fifty or one hundred years ago. We make more money from our farms, enjoy the spending of more, and keep more than did they. We get greater pay for our actual labor, and a larger per cent. on our money invested in the business than did they. These facts will be proved by other equally reliable statistics.

The entire capital invested in the business of agriculture in the ten eastern towns of Hampshire at the present time, in domestic stock of all kinds, in tools, implements and vehicles, and real estate, including all farm buildings, unimproved and unimprovable land, is \$6,386,277. The entire cost of labor, including board, to work this capital, in 1870, was \$442,724. Grant that all the other expenses of the business are equal to the cost of labor and board (but they are much less) and the whole cost of carrying on the business was, \$885,448. The income from all expenses and capital in 1870, including betterments and increase of stock, but excluding the value of the annual growth of wood, was \$1,660,828. Deducting the cost of

production, \$885,448, we have a profit of \$775,380, which is more than twelve per cent. on the capital invested. The marked deterioration of our farms, and their diminished yield was at its lowest point from 1840 to 1855. Between these periods the rapid increase of our manufactures of all kinds, the development of our railway system, the increase of branches of business, drew large numbers of our farmers from the land to engage in other pursuits, so that the number of men engaged in farming was very materially decreased from 1845 to 1860. The stimulus given to other pursuits during these years, and the increased population deriving their support therefrom, called for larger supplies of agricultural products, and materially enhanced the price of some.

Between 1855 and 1865, our farmers found themselves in the dilemma of being called on for an increased amount of their products at enhanced prices, with an inability for the want of labor to meet the demand, and they were wise in their generation, and applied the labor they had to less acres, cultivated more thoroughly, and produced such products as the markets to which they had easy access demanded. Here our real improvement began, and the statistics show the suddenness and the success of the change.

In 1855 we had 5,259 milch cows; in 1865, 4,896; and in 1870, 4,830. In 1855 we sold 456,272 pounds of butter, and 253,969 pounds of cheese. The value of the butter and cheese sold was \$116,182. At that time our farmers sold very little milk. In 1865 we sold 213,209 pounds of butter, 158,245 pounds of cheese, and 110,240 gallons of milk, the whole value being \$103,709. In 1870 we sold 502,753 pounds of butter, 106,241 pounds of cheese, and 206,967 gallons of milk, the whole value being \$266,709, or more than double the value of the product of 1855. In 1855 we had 25,684 acres in mowing, which produced 22,764 tons of hay, or about 1,700 pounds per acre. In 1870 we mowed 23,970 acres, which yielded 28,501 tons, or 5,737 tons more than in 1855, averaging about 2,400 pounds per acre. The proportion of "wet swale" mowing was much less in the latter than the former period. There were 5,831 acres in Indian corn in 1855, which produced 167,099 bushels, averaging about 28 bushels per acre. In 1870, 2,605 acres, which produced 100,706 bushels, or about 38 bushels per

acre. Of rye, we had in 1855, 4,668 acres, producing 42,930 bushels, or about nine bushels per acre. In 1870 we had 854 acres, producing 26,126 bushels, or about 30 bushels per acre. We cultivated 1,787 acres of potatoes in 1855, which yielded 151,326 bushels, or 84 bushels per acre. In 1870 we had 1,450 acres, producing 129,468 bushels, or 89 bushels per acre. The value of all our farm products, with the exception of slaughtered meat was in 1855, \$1,059,921 ; in 1870, \$1,410,253, or an excess in 1870 of \$350,332.

These statistics indicate pretty clearly the course of our agriculture, its progress and present condition, and it only remains to consider whether the system is the best for our circumstances, and what should be done to make it more prosperous and remunerative. The marked features of the exhibit are, that we farm many less acres than formerly, have decreased materially in the product of all the cereals, and that the bread grains, rye and wheat especially, are insignificant in amount. In fact it is undoubtedly true that our farmers do not produce so much grain as they consume. Many of them who stall feed numbers of cattle, or have their barns full of milch cows in winter, feed them freely on grain, all of which is purchased from abroad. In consequence of existing circumstances, the special demands of the markets to which we have easiest and cheapest access, the system of cultivation to which our soil has long been subjected, and its present condition, this course commends itself to my best judgment.

To make grain and export it as a market product, is to send away the choicest mineral elements of the soil, those which are very slow to develop, and which it is difficult and costly to supply. To raise large crops of hay, and feed it in conjunction with foreign grain, and send away principally carbon, in the form of fat and butter, is certainly best for the land, and in consequence of the character of our markets, and the cost of cultivating grain the best for the pocket. The results of this course are a sufficient commendation, as they show a gradual increase per acre of our leading crops.

The change in our agriculture within fifteen years is encouraging. We have, however, not only begun to set back the tide of depreciation, but commenced to ascend the steep of improvement, our progress in which, it seems to me, might be accelerated.

ated by a change in the character of the lands we use, by a greater variety in the crops we cultivate, and a more constant attention to the effect on the soil of change in plant production. As a general rule, from the first settlement to the present time, the lands which have been most sought for and prized for cultivation, have been the alluvial, the dry plains and slopes, and the hills. Wet lands, not simply swamps, but those made sterile, or producing nearly worthless plants, in consequence of want of draining, though rich in all the elements of fertility, have been almost universally rejected for cultivation. Our agricultural society continually offers premiums for reclaiming these lands, and sometimes has them to pay, yet the great mass of our farmers are indifferent to improvement in this direction. Necessity has compelled to the abandonment of some of the former class of lands, but now, as a wise and intelligent system of management, thousands of acres of this area should be planted or allowed to go to forest, and judiciously cared for as such. It would be a profitable operation in itself, and have a beneficial influence on the lands in cultivation. This loss of land for any of the objects of agriculture, would be more than compensated by systematic, intelligent labor, directed to bringing our wet, water-poisoned lands into a condition for the production of all crops by draining. In some localities it would be better for a farmer to emigrate, and buy dry land for his tillage rather than to drain, but our circumstances are such that we can afford to drain ; in fact, we cannot afford to do otherwise.

The average value of all our farm lands in 1870,—the good, bad and indifferent,—was \$49 per acre. But good lands for cultivation are worth from \$1 to \$300 per acre. We have thousands of acres now practically useless for cultivation, which if underdrained at an expense of \$75 per acre, would be as good for every crop we grow as our best tillage lands. When our farmers make these changes in the lands they cultivate, it will be a long stride in the march of improvement.

That standard fruit, the apple, is cultivated by us to a fair extent, but pears and the small fruits, as market products, are almost unknown. We have good markets for such crops within easy reach, but do not supply them ; but, on the other hand, our people, farmers and all, make a market by consuming these fruits of foreign production. Our soil and climate are adapted

to such products ; their cultivation has commenced on a limited scale, and it could be enlarged to our health and profit.

The returns of 1870 do not give us credit for the cultivation of any root crops, and they do no special wrong, for our State returns of 1865 tell us that in that year of beets, turnips and carrots we had but sixty-eight acres, and pretty careful observation indicates that they have not materially increased since.

The system of carrying stock through the winter on a diet exclusively of dry hay and grain is, to say the least, one of very doubtful expediency and profit, and the introduction of roots, mangolds, Swedes, or carrots, as a crop for stock feed, would increase our crop variety, change our rotation, enable us to keep larger herds and in better condition, improve the physical condition of our soil, and increase the material for its fertilization.

In making suggestions for the improvement of the agriculture of Eastern Hampshire, we should keep continually in mind that tobacco is, and perhaps is to be, the leading crop next to hay, and on account of the ease, certainty and despatch with which it is converted into money, it is better even than that. The change, therefore, must be one which, if it lessen the cultivation of tobacco, will make a corresponding return of cash, either in ready cash, or the improvement of the lands. Now, tobacco feeds enormously from the soil, but it makes no stock feed ; it leaves nothing on the farm to compensate for the draft it makes. The fertilizing elements must be returned from other sources. In view of these facts, a desirable improvement would be the introduction of some really profitable crop, which would thrive on the soil elements which the tobacco does not consume, which would materially aid in sustaining the stock of the farm, and making manure to support its fertility.

Most careful, searching inquiry and examination at home and abroad, and through experiments tried on our own territory, at the Agricultural College, seem to indicate beyond a reasonable doubt, that the introduction of the sugar beet as a crop, and its use as stock feed, or as a fertilizer, after its saccharine matter has been manufactured into sugar, would accomplish this desirable object. This culture seems to be required by the fact that there is an enormous and rapidly increasing demand for

its products, while supplies from the usual sources are continually diminishing.

In 1871, after consuming the products of our Southern cane-fields, we imported and used \$100,000,000 worth of sugar. That year Massachusetts used \$5,000,000, and the consumption is increasing at the rate of fifteen per cent. a year. The culture can be introduced, not really as an experiment, but as a permanent business, all the difficulties of which have been solved most satisfactorily.

At the present time forty per cent. of all the sugar made in the world is from the sugar beet, and in the temperate zone. In 1871, France produced 300,000 tons of beet sugar, and the cash value of its beet products was more than \$50,000,000. Those districts of the country which produced the most sugar, also produced more grain and beef than any others, and vastly more than they did before the introduction of this industry. This the farmers and manufacturers of France have accomplished under very depressing circumstances, for the government collects a tax of nearly four cents a pound on the sugar, and draws an annual revenue from the beet crop of \$16,000,000.

Germany has met with equal success in this culture, and it is commencing with highly flattering prospects in Russia and England.

The universal testimony is, that besides the value of its manufactured product, it is an invaluable adjunct to improvement in every other branch of agriculture.

To produce the beet successfully and of sufficient sweetness, in a measure compels to a correct system of agriculture, which results in the increased fertility of the soil and largely augmented products of all other kinds. The soil and climate at Amherst produces as sweet a beet as that of France or Germany, and sugar in every respect as perfect as any ever produced in the tropics. What the culture of the beet has done for France it may do for the Connecticut Valley, giving greater variety to our productions, making a profitable crop, and aiding to counteract the results of our present culture.

Tobacco requires large quantities of manure, rich in every element of plant-food, but especially in nitrogenous matters. The sugar beet will not bear nitrogenous food, and would follow tobacco with a very slight addition of some mineral element.

Its action on the soil will be to prepare it for subsequent crops, and after the sugar is extracted it will furnish as much stock feed as an acre of hay, and to keep more stock and make more manure.

At the present time our farmers purchase enormous quantities of fertilizers. They transport manure by rail long distances, much of it from beyond the Hudson, at an expense of from \$10 to \$15 per cord. Peruvian guano and the manufactured phosphates are much used, and ashes when they can be obtained. With the changes indicated in the soil to be cultivated, the increase in the variety of our crops, the adoption of a more rational rotation, and the influx of such quantities of fertilizing materials, we can have reason to believe that our agriculture will be abundantly prosperous; that although our cultivated acres may not increase, yet their aggregate products will be greatly enhanced, yielding still larger and more satisfactory profits to our cultivators.

LEVI STOCKBRIDGE.

The paper was accepted and ordered to be printed.

Dr. LORING then submitted a report as delegate to the Deerfield Valley Agricultural Society.

The various reports of the Delegates and of Committees on essays not previously acted upon, were then taken from the table, read a second time by their titles and adopted.

Voted, That any unfinished business be referred to the Committee on Printing, with full power.

The Board then adjourned.

SECOND ANNUAL REPORT ON THE INJURIOUS AND BENEFICIAL INSECTS OF MASSACHUSETTS.

BY A. S. PACKARD, JR., M. D.

The past year has been marked by the unusual abundance of two insects which have preyed on our field crops. Both are comparatively strangers in this State, and illustrate the law that new enemies of our crops make their appearance from year to year most unexpectedly, and do a large amount of damage before their presence has been generally known or often even suspected. And this probably will always continue to be the case. While the newly settled parts of the country are peculiarly exposed to the ravages of insects, after the lapse of a few years the equilibrium seems in a measure to be restored, and average crops can be raised. But still, here in New England, where the country has been settled over two hundred years, we are occasionally disturbed by the abnormal increase in the numbers of kinds of insects usually not abundant. This is primarily due to variations in our seasons, but from the scarcity of insectivorous birds which fail to come to our aid in these times of extremity, the insects remain in undiminished numbers and accomplish their work of devastation without let or hindrance. This will probably always be the case, so long as the most obvious principles of economic entomology remain unapplied.

In England, where the arable land has been cultivated for over a thousand years, Mr. Curtis, the author of "Farm Insects," complains that in economic entomology "every season brings forth fresh subjects for investigation, and although this arises in a great measure from the neglect which has attended this important department of natural history, it seems as if a cycle were revolving, which exhibits species previously unobserved, at intervals of greater or less extent; and whether regular or irregular cannot be determined for want of data; rare and unnoticed species, no doubt, become abundant or scarce by changes of temperature; certain and continued currents of air, a want of food in their accustomed localities, and similar phenomena may also change the regular course and geographical distribution of insects for a season; so that enemies to the cultivator may suddenly become great annoyances in latitudes where they had been previously unknown; and may there remain until a

counter-action takes place, either of climate or of parasitic agency, which at once sweeps away the plagues and releases us from those great armies which are employed by the Power who created them."

We may be allowed to glance for a moment at the attention paid in Europe to practical entomology. The plant louse, (*Phylloxera vitifoliae*), affecting the grape-vine to such a fearful extent in France, and which in this country has done considerable mischief, is still attracting much attention. Within a year past as we learn from the "Revue Scientifique," the French Academy has offered a prize of twenty thousand francs to encourage studies with the view to ascertain a remedy which shall protect the vine without destroying it, as some of the remedies proposed killed the vine as well as the noxious insects. The French Government has always been alert and liberal in this matter of economical or applied entomology, a subject more important to agriculture than is yet dreamed of in this country, where it is estimated that we lose hundreds of millions of dollars annually from the attacks of injurious insects and plants.

During the past summer the losses of wheat, corn and other crops in the Western States have been enormous. The onion crop raisers in one county (Essex) alone in this State have lost, it is estimated, at least from ten to fifteen thousand dollars' worth of perhaps the most valuable crop next to the hay crop, from the attacks of a minute insect called Thrips. This annual loss, much of which by timely exertion, and especially the cultivation of insect parasites, could be avoided, will accumulate in intensity, and become a grievous burden a century hence, when our country will be more densely populated and every grain of food will be needed; unless more attention than is now thought necessary be given to the subject.

The foresight of the French people, despite the present gloomy views of their journals over the decadence of science among them, is conspicuous in their prompt and scientific treatment of the silk-worm disease (*pebrine*). This is a disease that has already extinguished a most promising experiment in the rearing of our native silk-worm, as Mr. L. Trouvelot of East Medford, who had proved the ease with which our native silk-worm may be reared, unfortunately lost several thousand dollars' worth of them by this disease, imported accidentally in eggs of the Yama-mai moth

received from Japan *via* Paris, where they must have been inoculated with the germs of this much-dreaded insect plague.

Pasteur and Quatrefages, and others whose names are illustrious as investigators, have been commissioned by the French Government to study the causes of this disease, and it now thought, that, following out the suggestions M. Pasteur—the result of profound studies on this subject—if healthy eggs be selected by aid of the microscope, and those infested with the parasitic fungus be destroyed, silk culture will be again restored in France and Southern Europe. As the result, a single silk raiser, whose worms this year will produce 32,000 ounces of eggs, hopes next year to have 100,000 ounces, and the prospect of a profit of a million of dollars! It should be remembered that this remarkable result is due, primarily, to the most abstruse researches upon microscopic plants by specialists, for the pure love of science. Their cloister studies, put to practical account, saves the destruction of one of the largest agricultural interests in Southern Europe. In like manner had the general government or individual States, encouraged the entomologist and botanist in their studies, and caused them to be turned to practical account, we should not have had to give up the cultivation of wheat in the northernmost States; our cotton crop could perhaps have been doubled, and our garden and field crops have regularly yielded a steady return to the producer.

In England, where less attention has been paid to practical zoölogy than with us, increased interest is taken in this subject. A botanist has just been appointed to the Royal Agricultural Society, and an entomologist will soon be elected.

INSECTS INJURIOUS TO FIELD CROPS.

The Onion Thrips.—About the middle of August my attention was called by Mr. B. P. Ware of Swampscott, to his serious loss of onions from the attacks of a minute insect. The leaves were observed to suddenly turn yellow and wilt, and the plant died. In this way large patches became infested and turned yellow, until in two or three days these prolific insects spread over the whole field. They seemed to increase most rapidly during the unusual dry, hot weather that we experienced about the middle of last August. On the 11th of August a whole acre was thus cut off. Mr. Ware informed me that the onion plants have been more or less infested in this way for some fifteen years, but

the damage done this year was greater than ever before. This evil seems wide spread in Essex County, as not in Swampscott alone, but in Lynn, Salem, and parts of Danvers, the onion crop has been similarly infested. About \$100,000 worth of onions are raised in Essex County alone, and Mr. Ware judged that at least a tenth part was destroyed by this new pest; so that in one county alone and by one kind of injurious insect we have in one season lost \$10,000. The onion crop is next to the hay crop in value, as it is sold for cash.

On examining the specimens brought into the Museum of the Peabody Academy of Science, the leaves were found to be covered with hundreds of a minute Thrips, which by gnawing the surface of the leaves, had caused them to turn white in spots, and subsequently yellow; where they were most numerous the outer skin of the fleshy leaves was entirely eaten off, and though it was difficult to imagine that so minute insects could have caused the death of so stout and thick-leaved a plant, yet here were hundreds of the culprits in all stages of growth plying their jaws before our eyes in proof.

This insect, which occurred in both sexes and in all stages of growth from larvæ of minute size, proved to be the wheat Thrips of Fitch (*Limothrips tritici*), who gives an account of its appearance and habits in his "Second Report on the Noxious, etc., Insects of New York," p. 804. His attention was first called to this insect by a correspondent in Wisconsin, who found them in great numbers in blossoms of various plants. He wrote Dr. Fitch that they first "made their appearance about the middle of June, or at least they were then first noticed, so far as I have heard. For about two weeks they were found in the blossoms of wheat and of clover, causing numbers of the blossoms to wither, and in some cases the kernel was also attacked." Dr. Fitch himself never seems to have noticed this insect in New York, nor that it has ever been found in the onion, but thinks it is the species to which Dr. Harris refers in his treatise. In that work the author speaks of a "pernicious insect in the ears of growing wheat," which "seems to agree with the accounts of the Thrips cerealium which sometimes infests wheat, in Europe to a great extent." From his brief description it is probably the insect now under consideration to which Dr. Harris refers.

The various kinds of Thrips are minute, narrow-bodied insects seldom exceeding a line in length, and remotely allied to the

bed bug and squash bug in structure, but differing from them in having free jaws adapted to biting, while those of the bed or squash bug form with the other mouth-organs a sharp, hard beak, with which they puncture leaves or the flesh of their victims, when carnivorous in their tastes. These Thrips are further distinguished by their wings being very long and narrow, and beautifully fringed; and when folded over their back they do not conceal the body beneath, as is usually the case. Moreover, they are exceedingly active in their habits, running or leaping like fleas.

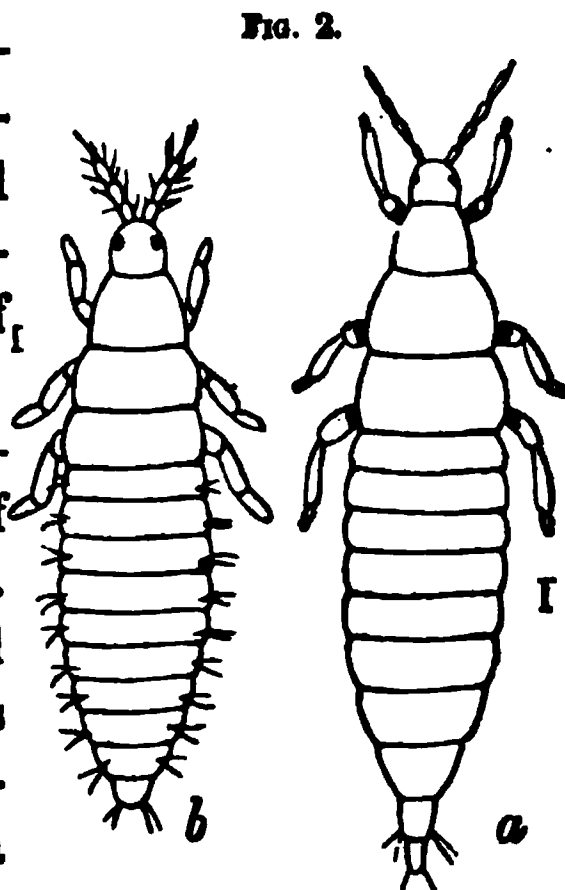
The females alone are winged, the males being wingless and closely resembling the larvæ. The body of the female is smooth and shining, uniformly greenish yellow, with no other markings; the legs are a little paler towards the articulations. The antennæ are 8-jointed, slightly longer than the head; the two basal joints are the largest; the three succeeding joints equal, regularly ovate, the 6th a little longer than the 5th; 7th and 8th minute, 7th a little shorter than 8th, each joint bearing four large bristles. This species differs from the European *L. cerealium* in having but eight joints, the 7th and 8th being minute, and with no intermediate short one, as described in the European insect.



FIG. 1.
Limothrips tritici (fem.).

The prothorax is square, the scutellum short, crescent-shaped, and the abdomen is long and narrow, smooth and shining, 10-jointed. Length, four one-hundredths of an inch, or less than half a line.

The larva (Fig. 2), is entirely greenish-yellow, the head and prothorax of the same color as the rest of the body. The eyes are reddish. The feet and antennæ are whitish, not annulated, as in *L. cerealium*. The feet (tarsi) consist of but a single joint ending in a point.



Larva and male of *Limothrips tritici*.

The male differs from the larva in having 2-jointed feet (tarsi) and



End of antenna of male.

7-jointed antennæ, those of the larva being 4-jointed. The second joint is exactly barrel-shaped, with two ridges or lines surrounding it, 3d and 4th joints long, ovate, the 3d being a little larger than the fourth, and with about twelve transverse lines, there being about eight on the 4th joint, from the end of which projects a remarkable tubercle, as seen in the figure. The 5th joint is square at the end, with about eleven transverse lines, and three or four stout hairs externally; 6th joint minute and spherical, while the 7th is three times as long as the 6th, and is finely striated, and with four unequal stout hairs. It is just twice the length of the female, measuring .08 inch.

The best remedy of a preventative nature against further ravages, after this insect has made its appearance, is to build a bon-fire upon the diseased patch, pull up the onions about, and throw them into it. By thus sacrificing a few onions at the outset, the evil may be nipped in the bud. For remedies less effective we would recommend showering the plants with strong soapsuds, or sprinkling them with sulphur, or the use of a solution of copperas, such as is used in killing the currant saw-fly, *i. e.*, a solution of a pound of copperas to ten gallons of water. The use of a carbolate of lime or air-slacked lime may also be recommended.

A heavy shower of rain will cause them to disappear for a while, and they probably only appear in such overwhelming numbers as this past year in consequence of the summer being an unusually dry and warm one.

The Onion Fly.—This maggot, which attacks the roots of the onion, is as abundant and destructive as ever. Its work, however, ceases about the time the Thrips is most abundant. The maggots make their appearance in Essex County about the middle of May, and by the third week in August most of them change into the pupa or chrysalis state. As a preventative measure worth adopting is one suggested to me by Mr. Ware, *i. e.*, to sow the seeds two inches deeper than usual so that the fly cannot so readily get to it to lay its eggs.

The Imported Cabbage Caterpillar and its Parasite.—This caterpillar was fully described, and its habits and ravages fully set forth in our last year's report. During the past summer it

has been fearfully abundant in gardens in Eastern Massachusetts. Were it not for the ichneumon parasite (Fig. 3, *a*, male; *b*, female; *c*, larva; *d*, pupa), which has been found to prey upon it very extensively, the cultivation of the cabbage would have to be given up in some districts. This invaluable ichneumon is one of the Chalcid family, and is the *Pteromalus puparum* of Linnæus. It is well known that the cabbage caterpillar (*Pieris rapæ*) was introduced into this country about the year 1857. I had supposed that the parasite had perhaps been imported with its host, but now find that it is undoubtedly a native of this country as well as Europe. Having been favored by Mr. Francis Walker with specimens of both sexes from England, labelled by him *Pt. puparum*, I found that our specimens did not differ specifically. Further, Mr. Walker wrote me that there were specimens of the same species in the British Museum taken in Hudson's Bay territory in 1844. During the past summer Mr. P. S. Sprague sent me specimens which had been raised from the Rape Caterpillar in Vermont. Mr. J. A. Lintner has also published a note in the "American Naturalist" stating that he had reared this parasite from the same kind of caterpillar, and previously to this Mr. S. H. Scudder had received numerous specimens from Mr. A. G. T. Ritchie of Montreal, Canada, who, if I understand his letter aright, first observed these chalcids upon the cabbage leaves in July, 1870, when the caterpillars were abundant. On the 23d of August of the same year he had some of the parasites hatch out. To Mr. Ritchie, then, is due the credit of being the first to make known the history of this invaluable insect.

So that the parasite seems to cover even a wider field than its host, and probably preys on our native cabbage butterfly, the *Pieris oleracea*, as in Europe it preys on *Pieris brassicæ*, the caterpillar so destructive to the cabbage there.

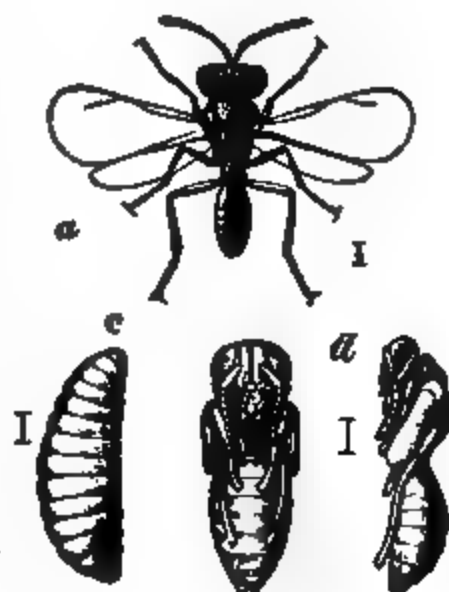


FIG. 3.

Parasite of the Imported Cabbage Butterfly.

The male of this *Pteromalus* is a beautiful pale-green fly, with the body finely punctured and emitting metallic tints; the abdomen, or hind body, is flat, in dried specimens with a deep crease along the middle of the upper side, and it is much lighter in color and with more decided metallic reflections than in the rest of the body. The antennæ are honey yellow, with narrow black wings. The legs are pale honey-yellow. It is .08 inch to a tenth in length.

The body of the female, which would be thought at first to be an entirely different kind of insect, is much stouter, broader, with a broader oval abdomen, ending in a very short ovipositor, while the underside of the body near the base has a large conical projection. It is much duller green than the male, and the body is more coarsely punctured. The scutellum of the metathorax is regularly convex, not keeled, in both sexes. The antennæ are brown, and the legs brown, becoming pale towards the ends, the ends of the femora being pale; the tibiæ pale-brown in the middle, much paler at each end, while the tarsi are whitish, though the tip of the last joint is dark. It is from a line to a line and a third in length. It differs from Harris' *Pteromalus vanessæ* in the little piece known as the scutellum of the metathorax being smooth, not keeled, and by its darker legs.

The larva is a little white maggot about a sixth (.17) of an inch in length. The body consists of thirteen segments, exclusive of the head, and is cylindrical, tapering rapidly towards the head, while the end of the body is acutely pointed. The chrysalis is whitish, the limbs being folded along the under side of the body, the antennæ reaching to the end of the wings; the second pair of legs reaching half way between the end of the wings and end of abdomen; while the tips of the third pair of feet reach half way between the second pair of feet and the end of the abdomen. It is from a line to a line and a third in length.

In the middle of September Mr. F. W. Putnam handed me one hundred and ten chrysalids, all but two of which were infested by these parasites in both the larval and pupal states; while from other chrysalids the adult chalcid flies were emerging. They continued to emerge until late in the autumn. The infested chrysalids of the butterfly could be easily distinguished by the livid and otherwise discolored and diseased appearance of

the body, while those unattacked had preserved the fresh color, and the tail moved about readily; the diseased ones becoming stiff and more or less dried. Mr. Putnam thinks that at least two-thirds of the chrysalids of this butterfly, hundreds of which had in the early autumn suspended themselves about his house and fences, had been attacked by these useful allies.

On opening the body of the infested chrysalids I found about thirty parasites in different stages of growth, in one case thirty-two, in another only twelve. We can readily see how efficient these minute insects become in reducing the numbers of their hosts. A large proportion of the *Pteromalus* undoubtedly winter over in the body of the chrysalis, the adult insects appearing in the spring. In England Mr. Curtis found the fly in June, so that evidently there is an autumn and spring brood of flies.

Another parasite is the larva of a parasitic fly, *Tachina* (Fig. 4, enlarged three times), the adult form of which closely resembles the common house-fly. It is a flattened, cylindrical maggot, both ends of the body rounded much alike. The mouth-parts are partly aborted, there being only two retractile horny mandibles by which the fatty portions of its host is eaten.

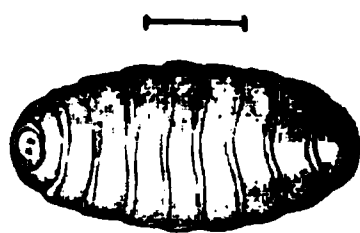


FIG. 4.

Larva of Tachina.

Besides this large *Tachina* I found a minute fly in the same bottle with a number of the chrysalids of the butterfly, and am inclined to think that it may have lived parasitically in them, but would not be confident that it is so. It is a small black fly, about a line in length, and with dark wings.

The Cabbage Web Moth.—My attention was first called to this moth, now almost cosmopolitan in its distribution, in September and October, 1870, at the Agricultural College at Amherst. The little green caterpillars were quite abundant on the under side of the outer leaves of the cabbages on the college farm, and their web-like, delicate cocoons were found attached to the leaf in depressions or folds. Afterwards a correspondent in Michigan sent me specimens of the worm, the cocoon and moth, stating that it was doing great damage to the cabbages there. The season at Amherst, as all over New England in 1870, was

very warm and unusually dry, which accounts for the unusual increase in this insect.

This insect, well known in Europe, whence it has been carried all over the civilized world, was first noticed in this country

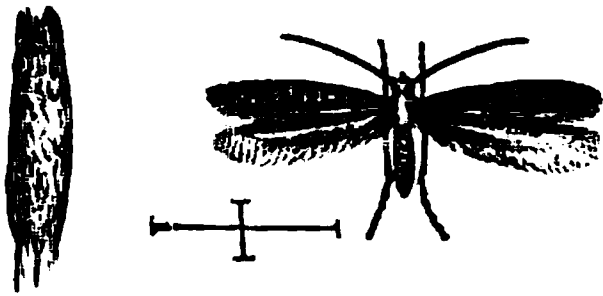


FIG. 5.
Cabbage Web Moth.

by Dr. Fitch in 1855, who gives an account of it in his "First and Second Reports," &c., having observed it in Illinois, but not in New York. He called it *Cerostoma brassicella*, but it is undoubtedly the well known European

Plutella xylostella Linn. (Fig. 5, moth and cocoon). Though the insect has been observed in this country only late in the autumn when the cabbages have headed, yet these worms, as Dr. Fitch suggests, probably belong to a second brood. Stainton, in his "Manual of British Butterflies and Moths," states that the moths fly in May and August, while the caterpillars appear in June, July, and a second brood again in September. Dr. Fitch suspects that the first brood of caterpillars may feed on the young cabbage plants in early summer, and thus do more mischief than in the autumn when the heads are fully formed.

The caterpillar is a little pale green worm, with small, stiff, dark hairs scattered over the body; it is a quarter of an inch long. When about to transform it spins a beautiful open network of silk as a cocoon, open at one end, of white silken threads; it is a third of an inch long.

The moth itself is pale gray, with the head, palpi and antennæ white, but the latter are ringed alternately with white and gray on the outer half. The rest of the body is gray, except on the under side, and on the middle of the thorax, where there is a broad, white, longitudinal band, which when the wings are folded is continuous with the white band along the inner side of the wings. The two front pair of legs are gray, with the tarsal joints ringed narrowly with white; the hind legs are whitish and hairy. The fore wings are gray, with a conspicuous broad, longitudinal, white band along the inner edge, and extending to the outer third of the wing; this band sends out three teeth towards the middle of the wing, the third tooth being at the end of the band. There is a row of dark dots along the outer edge of the stripe; a row of blackish dots along a pale shade just outside of

the front edge of the wing, and two diverging rows of blackish dots diverging upon the tip or apex of the wing. The fringe is marked with a few dark spots. The middle of the wing next the white band is darker than the front edge, while a faint yellowish shade runs along the middle of the outer half of the wing towards the tip, enclosing a few black dots. It expands a little over half an inch.

Should young plants be attacked by the worms, the best remedy would be to shower them with soapsuds. For the autumnal brood of worms the plants should be plentifully showered; and if this is not efficacious, the worms should be picked off by hand, the cocoons especially.

The Radish Weevil.—About the year 1857 I found in Maine upon the radish leaves a specimen of a weevil, which I cannot distinguish by Curtis' description and figure from the European *Ceutorhynchus assimilis*, Payk. Fig. 6, *a*, beetle, *c*, larva, *b*, pupa, *e*, pod with hole out of which the grub has come, *d*,

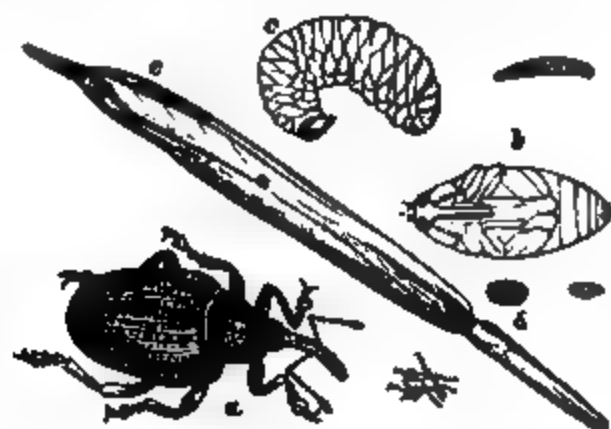


FIG. 6.
Radish Weevil.

FIG. 7.

earthen cocoon. (From Curtis.) (Fig. 7 drawn from an American specimen).

As it has not before been noticed in this country, and may become in future years more or less of a plague, we give a brief description of the insect and its habits.

The beetle is minute and pale-gray, with a remarkably long, slender, curved snout, from the middle of which arise the long elbowed, slender antennæ; the basal joint is long and slender and succeeded by seven spherical joints; the oval club pale at tip, consisting of four joints. The body is black, but so densely covered with gray, flattened hair and scales, that it seems to be uniformly

pale-gray. These hairs become broad, flattened scales on the sides of the body. The prothorax is triangular, seen from above, swollen on the sides, and the head, exclusive of the snout, is very small. The body behind is unusually broad; the wing-covers have each nine (Curtis mentions only eight) longitudinal, fine, punctate furrows, the ridges between being much flattened. The legs are rather short, and pale-gray like the rest of the body. Curtis mentions that the hindermost thighs have a short, thick tooth beneath. I find one on the thighs of both the middle and hind legs. However, the insect may be considered as identical with the European species, until proved otherwise by comparison of specimens, as it has probably been imported in radish and turnip seed. In Europe this weevil was first observed among turnip seed, where as a white maggot it devours the seed in the pods. When fully fed it gnaws a hole through the side of the pod, out of which it escapes, and makes its way into the ground two or three inches below the surface, where it forms a brown, oval cocoon of the grains of dirt. Here it remains three weeks in the pupa state, and by the third week in July the beetle appears. Mr. Curtis, whose account we have reproduced, thinks that the female lays its eggs in the embryo pods.

The Pitchy-Legged Weevil.—Another weevil has for several years been not uncommon in Essex County, which in England, from which it has been imported, is often, as Mr. Curtis says, “a dreadful pest in gardens, committing sad ravages on vines in hot-houses and on wall fruit, during the night, when they emerge from their hiding-places in old walls, from under the bark, and clods of earth, to revel upon the branches of the new wood in April, or to feed upon the young shoots, which soon become black. They likewise injure raspberry plants in spring, by eating through the flowering stems and leaves, and they nibble off the bark, and eat out the buds of apple and pear trees as early as February or March.” But they are said by Curtis to do still more damage to pease, turnips, and young winter-plants, as savoy, kale, broccoli, &c.

I have detected this weevil on the Beach Pea during the last week in July, and it is not uncommon in gardens, and even, if I

am not mistaken as to the identity of the insect, will enter ferneries and nibble the ferns and make considerable havoc among the plants before its presence is suspected.

This insect, which is likely to prove annoying, is the *Otiorynchus picipes* of Fabricius (Fig. 8, enlarged).

The body is pitchy brown, and covered with microscopic, pale scales, resembling a scallop shell, being marked with a few prominent ribs. Indeed, many of the weevils seem to be provided with scales like those of butterflies, Poduras, and a few other insects. The beak, so short and slender in the radish weevil, is here broad and short, square at the end, from which the elbowed reddish-brown antennæ



FIG. 8.
Pitchy-Legged Weevil.

arise. The head is a little darker than the rest of the body, and is coarsely punctured. The prothorax is coarsely granulated, the granulations being arranged in irregular rows. The wing-covers are adorned with about eleven high, rounded, longitudinal ridges on each cover, and with coarse punctures along the furrows between them. There are also about twenty rows of pale dots along the wing-covers, consisting of scales. The legs, including the claws, are rather paler than the rest of the body. The body is also covered with scattered pale hairs bent down on the surface, especially on the top of the head; these hairs remain after the scales are rubbed off. It is a quarter of an inch in length.

INSECTS INJURING THE RASPBERRY.

The Raspberry Saw-Fly.—In an article contributed to the report of the Board of Agriculture for 1870, and entitled “Injurious Insects new and little known,” I incorrectly stated that a little beetle, the *Byturus unicolor*, ate holes in the leaves of the raspberry, as well as the flowers. Mr. F. W. Putnam has since drawn my attention to the fact, which my own observations have corroborated, that two insects produce the mischief: the beetle eating the fruit-buds and flowers, while the injuries to the leaves are caused by the larva of a saw-fly—the *Selandria rubi* of Harris (Fig. 9, and larva, both enlarged), who first noticed it in 1845.

The worm is cylindrical, like a caterpillar in appearance, be-



FIG. 9.—*Raspberry Saw-Fly and Larva.*

ing quite unlike its congener, the viscid pear slug, the body being covered with fine hairs, giving it a somewhat velvety aspect. It is pale-green, with "six dorsal rows of tubercles, having two black bristles and four lateral ones on each side bearing white bristles." Mr. E. Norton, from whom I have quoted, and to whom I am indebted for a single female for description, and to serve as a subject to be drawn for the above cut, farther remarks in his treatise on this family of insects, that the false caterpillar appears in May. I have seen it early in the summer, in my garden. From its habit of feeding early in the morning or at night, it is scarcely seen, and is difficult to reach. The bushes, however, should be well shaken, and such leaves as have been riddled by them carefully examined, as the worms may often be thus detected.

The adult female fly is shining black on the head and thorax, while the tips of the mandibles are reddish and three-toothed. The shoulder-tippets (tegulæ) and base of the wings are honey yellow, while the wing veins are brown. The legs are honey yellow; the thighs (femora) brownish, as also the tips of the hind tibiæ. The third, fourth and fifth abdominal rings are pale-yellow, the remainder of the abdomen being brownish. This insect differs from the female of the well known rose saw-fly, which is almost entirely black, in the broad light band on the abdomen, in the paler veins of the wings, the different form of the cells, the thickened spot (pterostigma) being less rounded, and in having paler legs. It is also a little larger, measuring just a quarter of an inch in length.

INSECTS INJURIOUS TO FOREST TREES.

The Chestnut Weevil.—The chestnut is often infested by a large white maggot (Fig. 10, larva of *Balaninus* and chestnut infested), with a yellowish head, which attains its full size at the time the nuts drop. It is found in nuts sent to market, and it is probable that while some of the maggots gnaw their way out, and enter the ground in the autumn to transform, others delay until the spring. Its habits, however, are not known, nor even whether it be the same as the weevil of acorns, which has been proved by Mr. Riley to be the young of the *Balaninus rectus* of Say. We introduce from Dr. Harris' "Treatise on some of the Insects Injurious to Vegetation" a cut of *Balaninus nasicus* (Fig. 11), which is either the parent or closely similar to the parent of the chestnut maggot.

FIG. 10.
Chestnut Maggot.



FIG. 11.
Balaninus nasicus.

The Chestnut Borer.—The chestnut tree itself is remarkably free from borers, and no insect has hitherto been known to bore into the trunk. My attention has, however, been called by Mr. R. B. Grover, a student in the State Agr. College, to the fact that the *Arrhopalus fulminans* Fabr. (Fig. 12, enlarged twice), one of the family of Longicorn beetles, bores in the trunk. I know nothing farther concerning its habits, nor of the appearance of its grub. The beetle itself is blackish brown, with slight dark-blue reflections; the legs and antennæ are of the same color, the latter being scarcely larger than its body. The top of the head, and the sides of the prothorax, and under side of the body, are covered with a pale-gray pile,

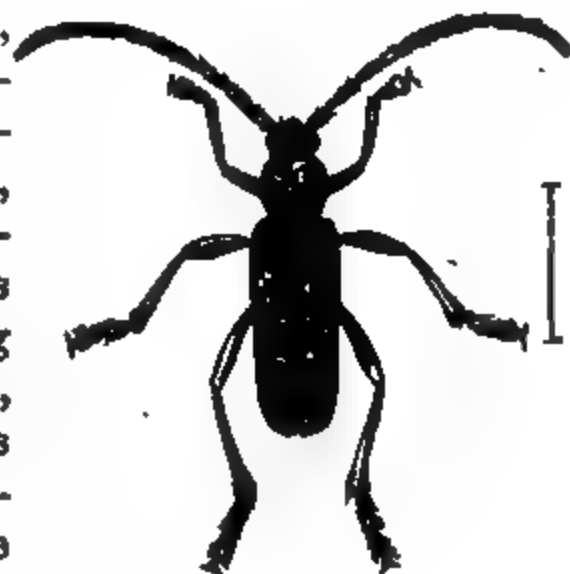


FIG. 12.—Chestnut Borer.

while certain silver markings on the wing-covers are composed of similar close-set, fine hairs. Those hairs on the sides of the prothorax enclose a conspicuous black spot, while the top is black, and more coarsely punctate than the wing-covers. The latter are each crossed by four acutely zigzag lines, composed of microscopic hairs, forming w-like bands on the elytra, the basal lines being less distinctly marked than the others. The ends of the wing-covers are also tipped with gray, especially on the inner side of the end. The legs are pitchy brown with light hairs, and with a reddish tinge on the terminal joints (tarsi). It is a little over half an inch long.

The Oak Callidium.—This is also a new borer in the oak, specimens having been taken by Mr. Alfred Poor from a white oak stick, June 20th, and presented by him to the Essex Institute several years ago. It is undoubtedly closely similar in its habits and in the form of the larva to the Grape Callidium figured in our last report. This is the *Callidium variabile*, and is one of our more common species of the genus. It is closely allied to *C. amœnum*, but is larger, and less coarsely punctured, while the antennæ are more reddish; the scutellum is concolorous with the wing-covers. The body, legs, except the femora, which are blackish in the middle, and antennæ, are reddish, the tips of the joints of the latter dark, and on the back of the prothorax are two black spots, often confluent. The head is black. The wing-covers are prussian blue, smooth, finely punctured, with rather thick, fine, black hairs, bent downwards. Specimens recently changed from the pupa state are brown, and the species is exposed to considerable variation, as its name indicates. The male is just half an inch long, the female .60 inch.

The Black Elm-Tree Borer.—This is a new borer in the elm, a tree also remarkably free from borers. I am indebted to Mr. G. D. Smith, of Boston, from whose immense collection of beetles the specimen I here describe was taken and given to the museum of the Peabody Academy. It is the *Physocnemus brevilineum* Say (Fig 13, nat. size). It is a singular-looking beetle, with a round, flattened prothorax, and wing-covers contracted in the middle, and not covering the tip of the abdomen,

while the thighs are unusually swollen. The antennæ are about two-thirds the length of the body, flattened towards the end, and somewhat serrate. The body above is velvety black, and brown-black beneath. The head is black, and coarsely punctured, and the prothorax is covered with short, dense, black hairs, like velvet. The wing-covers are Prussian blue in color, bent, corrugated, with an interrupted ridge just outside of the middle of each cover. They are covered with fine, black hairs, bent over. There is a pair of parallel, short honey-yellow lines in the middle of each wing-cover, with a third one a little in front, making in all six streaks. The legs and feet are black. It is a little over eight-tenths of an inch in length.



FIG. 13 — Elm-Tree Borer

THE COUNTY SOCIETIES.

The returns of the various county societies, an abstract of which is presented as the second part of this report, indicate a high degree of prosperity. The policy, which has now been adopted by nearly every society, of owning land and fixtures, has involved many of the associations in debts of varying amounts, but in most cases the real and personal property greatly exceeds the debts, while, in prosperous years, a considerable reduction of the latter is quite practicable. It must be apparent that any considerable amount of liabilities is a source of embarrassment, curtailing the usefulness and efficiency of a society, and preventing many expenditures which are desirable and calculated to promote the good of the community.

The amount set apart for the printing and distribution of the Transactions, for example, is, as a general rule, far too small. The volume of Transactions is the permanent record of the society, the standard by which it will be judged in the future, and

the means of conveying instruction to the public. Money judiciously invested in publication is better calculated to promote the objects for which the society was organized, than money distributed in small cash premiums. If it goes out in dribblets, it is not likely to accomplish any permanent results.

The value or efficiency of a society depends chiefly upon the management. If it adopts a low standard of excellence and aims to do all its work and accomplish its objects through the bluster of its exhibition, which lasts but a day or two at most, it can hardly expect, with any show of reason, to rouse the spirit of inquiry and improvement, and to do the good which the State had in view when it granted its charter and endowed it with the annual bounty from its treasury.

The show is ephemeral at best. It is no doubt a good thing, so far as it goes, to get people together, and to furnish them the means of rational enjoyment, social intercourse and instruction. Some societies stop here. They see no duty higher than this. Their capacity seems to exhaust itself with one spasmodic and tremendous effort. The idea of any latent possibility of benefiting the public by exciting thought and emulation, or by a search after new facts and the discovery of new truths, seems not to enter into their programme of operations. The encouragement they give for accurate experiments designed to improve the processes of farming or to develop the material interests of the people, bears no proportion to what they give for trifles light as air.

Now that a society is capable of acting on a higher level, and adopting higher aims, and attaining greater results than many of our societies do, is clear enough, because it has been done, and is done every year, by some societies, and can be done by any one that will go the right way to work. To ascertain this right way, with all local considerations taken into view, a committee to investigate and report some complete plan of operations would be able to suggest what reforms are needed. They would have the advantage of the experience and history of those societies whose success has been most marked. They would find out how committees on different subjects are made up, and how it is that exhaustive and well-considered reports are the rule in all well-managed societies, rather than the exception. They would learn what means are taken to create an

interest in the prosperity of the society throughout the farming community. They would be able to devise methods of varying the premium list, or to suggest changes in the mode of awarding prizes. Their report might be expected to contain many practical suggestions by which the usefulness of the society would be greatly increased, and through which it could return to the people of the Commonwealth some fair equivalent for the bounty that has been bestowed upon it.

I often hear the officers of societies complain that all the work falls on one or two individuals; that the people do not take hold and do the work; that it is difficult to get up any enthusiasm: as if this were any explanation of the torpidity of the society. If such a state of things exists, who is responsible for it? Is it not the fault of the management itself? Has there been a rightly directed effort to "bring out" the young men, or have they been left out in the cold? If an orator is to be chosen, has he not been called from abroad, in the shape of some lawyer, or minister, or politician, instead of giving the native, and perhaps too modest, talent of the society itself, an opportunity to make its appearance? If a display is to be made at the annual dinner, is there sufficient dependence upon the members of the society, or has the management looked abroad for higher-sounding names?

One of the grandest missions which a society has it in its power to accomplish is the education, the bringing out, so to speak, of a class of young men, farmers' sons, and leading them to feel that there is a work for them to do. Nothing builds up a young man so rapidly as responsibility. The mere opportunity is hardly enough; modesty may compel him to shrink from seeking it, but once thrust it upon him, and he grows up to it in a manner which often astonishes himself. He discovers in his own mind, resources of which he, perhaps, did not even know the existence. Success teaches him self-respect, and confidence in him gives him character.

Now if this class of the members of a society had been persistently encouraged through a period of ten years, how could there be any need of co-workers in the objects and purposes of the institution? How could there be any serious difficulty in finding suitable men to act as chairmen of important committees,—men both willing and capable of writing instructive and useful



reports,—and to aid in building up the reputation and influence of the society? A society ought to aim not only to make better farmers, but better men; and it can do it by encouraging the growth of native talent and relying more upon home products.

Nothing is more true than that progress is as essential an element in associated action as it is in the natural world. No society, any more than an individual, can remain stationary. If it does not make constant and persistent effort to advance, it will be sure to retrograde. If it does not constantly grow better, it will be quite sure to grow worse. It is therefore its duty to progress, to do more and to be more from year to year, than it ever was before.

It cannot be denied that our agricultural societies have, as a whole, been of vast benefit to the material interests of the Commonwealth. Apart from the merely social and educational influences which they have exerted, they have done much to improve both our stock of domestic animals and our modes of practical farming. If, as some pretend to affirm, the actual number of horned cattle has decreased in some sections of the State, it cannot be denied that the quality of those we have, and their actual money value, have been materially enhanced. This addition has come chiefly from the introduction of improved breeds of cattle, and the extensive use which our farmers have made of them in obtaining grades which have been raised up to take the place of much of our old native stock.

As an example of this gradual change, a large part of it due directly or indirectly to the encouragement given by the societies and to the opportunity which their exhibitions afford to display improved stock, and gain the credit which is sure to follow such enterprise, it may be stated that twenty years ago, there were but seventy-five pure-bred Jersey cattle in the State. I knew at that time every herd owned among us, and took pains to collect the facts about them. If I recollect aright, there was then but one herd of them west of the Connecticut River, and in the eastern part of the State they were but little known. Now there are single herds containing a greater number than that, and many a town which contains more pure-bred Jerseys than could have been found in the whole of New England at the time of the publication of my first annual Report. In addition to this, the grade or half-bred Jerseys are very common in

almost every part of Massachusetts, and their characteristics and peculiar fitness for the butter dairy are generally understood and appreciated.

The same may be said of nearly every other pure breed of animals originally imported from Great Britain, though some of them are better known and chiefly confined to more limited localities especially adapted to them. The number of extensive and enterprising breeders of Ayrshires has increased in a similar proportion within the last twenty years, and both pure-bred and grade animals of this breed are almost universally diffused throughout the Commonwealth. There can be no reasonable doubt that the average animal products of our dairy and other stock have been considerably increased in consequence of this improvement.

Nor should it be forgotten that better and more humane treatment has gone hand in hand with this general change and improvement in our stock. If a farmer has an animal in which he takes a peculiar pride, or in which he feels any special interest, he will naturally feed it a little better, give it a little better shelter and attention, than the common stock of the country used to get a quarter of a century ago. I have no doubt that the general treatment of all our stock is vastly better than formerly, and that this improvement is to a very considerable extent due to the introduction and keeping of the improved breeds of cattle.

A generous ambition to excel in stock, or to keep only the best, has its influence, also, in other ways. It is both the result of and the incentive to increased enterprise and thrift. How far the general improvement in farm buildings may be ascribed to this source it may not be easy to determine, but it is natural to suppose that it has had some connection with it; that is, that better barns are the result, in part, of greater intelligence and a greater knowledge of the animal economy. A very large proportion of the barns throughout the State are provided with commodious cellars, and most farmers would about as soon think of building a house without a cellar as a barn, so important is this convenience regarded in the economical management of the farm.

These general improvements in the farming districts are a source of just pride and gratification, and they seem to furnish

a sufficient answer to those who say that our soil is sterile, our climate inhospitable and our agriculture in the decline. If this were true, our farming population furnishes a very striking anomaly, for statistics show that, with reference to most of the staple products of this country, the yield of an average acre in Massachusetts is greater than that of any other State, and that the money value of the product of an average acre is greater; while any impartial traveller with an extensive observation both throughout the United States and the best farming districts of Europe, would admit that there is no farming community in the world presenting, as a whole, and with fewer exceptions, greater evidences of thrift, prosperity, enterprise and comfort, than our own. There may be, and there doubtless are, wealthier communities, countries where the landed property is concentrated and held in fewer hands, but for a free people, working their own farms, and dependent upon their own honest labor alone, it seems to me our country towns present the practical proofs of a remarkable material prosperity, which is at once the result and the criterion of success.

CHARLES L. FLINT,

Secretary State Board of Agriculture.

Boston, January 24, 1872.

